

From the Mouths of Men: A Model of Men's Perception of Social Identity Threat Toward
Women in the Workplace and Endorsement of Identity Safety Behaviors

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ABSTRACT

From the Mouths of Men: A Model of Men's Perception of Social Identity Threat toward Women in the Workplace and Endorsement of Identity Safety Behaviors

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This study proposed a moderated mediation model where social identity complexity was hypothesized to predict endorsement of identity safety behaviors intended to mitigate social identity threat for women in a male-dominated work context. Male awareness of systemic social identity threats for women was examined as a potential mediator of the proposed relationship between social identity complexity and identity safety endorsement. Finally, psychosocial safety climate was hypothesized to moderate the relationship between sensitivity to women's identity threat and identity safety endorsement. More than 400 STEM (science, technology, engineering, and math) male professors completed an online questionnaire measuring the study constructs. Ordinary least squares regression and bootstrapping methods were used to test the study hypotheses. Results showed that certain dimensions of social identity complexity predicted identity safety endorsement. While male sensitivity to women's identity threat predicted a particular type of identity safety endorsement, there was no support for the construct as a mediator. There was also no support found for psychosocial safety climate as a moderator in this study. Supplemental findings revealed that having academic tenure and increased contact with women colleagues positively predicted endorsement of identity safety. Theoretical implications, directions for future research, and practical implications are discussed.

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CHAPTER I: INTRODUCTION

There are extremely smart, capable and ambitious career women in today's society who work under conditions that can be potentially debilitating. Workplace cues have the potential to raise concern for women that they are evaluated negatively, judged harshly, stereotyped indiscriminately, and treated unfairly because of their gender (Steele, Spencer, & Aronson, 2002). Even women who do not consciously have these concerns can be negatively affected by exposure to cues that reflect negative stereotypes about women (Spencer, Steele, & Quinn, 1999; Steele, 1997). Thus, in order to deflect the negative consequences associated with gender threatening cues, it is important to understand how such cues can be minimized or eliminated as sources of threat, and by whom. Male co-workers play a pivotal role in women's work experiences and unfortunately are often the source of cues that exacerbate the deleterious effects of negative stereotypes (Adams, Garcia, Purdie-Vaughns, & Steele, 2006; Logel, Walton, Spencer, Iserman, Hippel, & Bell, 2009; Ruggiero & Taylor, 1995). However, men can also provide a respite from situations that induce concerns of sexist judgments, thereby contributing to the creation of inclusive workplaces. For instance, the U.S. National Organization for Men Against Sexism (NOMAS), a not-for-profit founded on pro-feminist principles in the 1970's, continually strives "to change not just ourselves and other men but also the institutions that create inequality" (NOMAS, 2008). Such a statement is a powerful reminder that men are not just potential perpetrators, but potential allies. At the same time there has surprisingly been little research exploring the role that men play in minimizing women's experiences of identity related threats. Consequently, the present dissertation aimed to better understand the personal attributes of men and the organizational conditions necessary for men to minimize threats in the environment for women working in male-dominated settings.

The social psychology literature is replete with evidence for what I have described as the interpretation and impact of stereotype relevant cues as an assault on the self-concept. Social identity threat refers to the concern of being negatively valued due to one or more social identities in a particular context (Steele et al., 2002). Thus, social identity threat compromises the sense of efficacy needed to bear positive feelings about one's identity, to maintain desired consistency in its meaning, and to behave in accordance with one's ideal self (Petriglieri, 2011). Due to the implications for women's recruitment, retention, and advancement in the workplace, research examining the negative outcomes associated with threat has been extensive. Studies have found that threat can result in the abandonment of leadership aspirations and opportunities (Davies, Spencer, Quinn, & Gerhardstein, 2002; Davies, Spencer, & Steele, 2005), negative attitudes toward work relationships and one's organization, decreased sense of belonging (Good, Rattan, & Dweck, 2012), and diminished general wellbeing (Adams et al., 2006; Monroe, Ozyurt, Wrigley, & Alexander, 2008).

In the study of cues that give rise to threat, scholars have found that salience of a self-relevant stereotype (Steele & Aronson, 1995), demographic underrepresentation of one's social identity group in a given setting (Inzlicht, Aronson, Good, & McKay, 2006; Murphy, Steele, & Gross, 2007; Roberson, Deitch, Brief, & Block, 2003), and an organization's attitude toward diversity (Purdie-Vaughns, Steele, Davies, Dittmann, & Crosby, 2008) can lead to the experience of threat. In addition, men's sexist attitudes and behavior have been considered as sources of threat (Adams et al., 2006; Logel et al., 2009; Ruggiero & Taylor, 1995). Given the multiple ways by which threat can be induced, various strategies are needed to combat it (Shapiro & Neuberg, 2007).

Empirical focus regarding threat reduction has been on identifying and changing environmental aspects such as increasing minority representation (Kray & Shirako, 2011), fostering a favorable climate for diversity (Purdie-Vaughns et al. 2008), and highlighting minority role models (Roberson & Kulik, 2007; Steele, Spencer, & Aronson, 2002). Another intervention concerns addressing gender stereotypes by acknowledging and deemphasizing negative stereotypes and emphasizing positive stereotypes (Kray & Shirako, 2011). The aforementioned strategies target threatening cues related to demographic underrepresentation, stereotype relevance, and organizational attitude toward diversity. Despite our knowledge that men are also inducers of threat, less attention has been paid to how individuals can reduce threat for others.

The power of professional relationships to incite or inhibit social identity threat cannot be underestimated since identity is constructed, maintained, negotiated, and reconstructed in social life (Weick, 1995). The extent to which there is collegiality with coworkers and support from senior colleagues is a significant and influential dimension of one's career (Gersick, Bartunek, & Dutton, 2000; Kahn, 1990; May, Gilson, & Harter, 2004). In fact, positive work relationships predict emotional vitality and increased job performance (Carmeli, 2009). In the case of women working in male dominated settings, more information is needed about their male colleagues, who may be a source of threat, but may also be a source of identity safety. If an organizational climate free of social identity threat is to be realized, the behaviors of individuals must be aligned with the systemic measures in place designed to reduce threat and its consequences. A practical example drives home this point.

Within an organization, employee resource groups (ERGs) are networking or affinity groups comprised of individuals of an underrepresented demographic category. Women's ERGs

are common in many of today's large corporations and professional service firms (Catalyst, 2009). The main objective of a women's ERG is to advance the representation and standing of women in the organization by increasing social networks, facilitating peer mentoring, identifying barriers to recruitment, retention, and advancement, raising organizational consciousness of barriers, as well as providing support for the mitigation of barriers (Friedman, 1996). However, one determinant of ERG success is the extent to which there is support from management and executives, who tend to be men (Bierema, 2005). Thus, men in the organization must recognize and have appreciation for the unique workplace challenges and potential threats faced by women. Well, Jack Welch, former CEO of General Electric (GE) and revered business strategist, had this to say about the 500 member women's ERG at GE, "The best of the women would come to me and say, 'I don't want to be in a special group. I'm not in the victim's unit. I'm a star. I want to be compared with the best of your best,' ...Stop lying about it. It's true. Great women get upset about getting into the victim's unit" (Bussey, 2012). In what context did he make these comments that clearly reflect his notion of networking groups as little more than havens for victims? He made his remarks in a presentation to a room filled with women executives during a 2012 Women in the Economy Conference, and he had more to say. The Wall Street Journal (Bussey, 2012) went on to report his attitude toward mentoring programs, which he declared as, "One of the worst ideas that ever came along. You should see everyone as a mentor." His advice to women? "Over-deliver. . . Performance is it!" For him, performance is a behavior to be taken at face value, independent from sociocultural and historical factors that perpetuate gender inequality and affect work behaviors.

Not shockingly, many women in the audience were offended by his comments, which they promptly demonstrated by walking out on the presentation. The outrage that women felt

was articulated by one female executive as a lack of, "...recognition that the culture shapes the performance metrics, and the culture is that of white men" (Bussey, 2012). Even if a woman were to heed Welch's advice and tirelessly work her way up the corporate ladder, research suggests that performing well in spite of threat reduces executive control function (i.e. the cognitive and physiological resources needed to self-regulate) and can lead to detrimental effects in non-stereotype relevant domains due to a weakening of self-control (Inzlicht & Kang, 2010). Deleterious effects include increased aggression, overeating, and risky decision making (Inzlicht & Kang, 2010). Social identity threat may not have a direct effect on women in the workplace, yet there remains the potential for it to affect them elsewhere.

Welch's comments are a sobering example of insensitivity to the existence and prevalence of social identity threat. Not only that, his comments are in and of themselves cues that could spark the experience of threat. At the same time, in order to lessen the pervasiveness of social identity threat for women in the workplace, we need people like Jack Welch; that is, we need powerful white men, the organizational majority, to be advocates, allies, and role models for how to work with women and other underrepresented groups in ways that buffer social identity threat (Connell, 2003) and encourages women to bring their whole and authentic selves to work (Thomas & Ely, 1996). As some of the women in attendance noted, Welch lacked understanding of how threats are woven into the organizational fabric, which in turn affects performance. It seems that an important requisite to mitigating threat for women is being aware that threat exists and is a real issue with which women must contend. Therefore, social identity threat scholarship would benefit from understanding the extent to which men acknowledge the existence of threat, especially in male-dominated environments. In addition, we need to glean the

characteristics of men who recognize threat and the implications of men perceiving or not perceiving threat for women.

The purpose of my dissertation was to begin to address the following research questions:

What are the characteristics of men who are likely to be aware that social identity threat exists for women? How are these men likely to behave toward women in ways that minimize threat? And finally, what role might the work environment play in determining when men minimize threat for women?

Men's awareness of social identity threat is important to consider in the discussion of men's engagement in inclusive workplace behaviors. While perceptions of social identity threat has been measured from the stigmatized person's perspective (e.g. Bergeron, Block, & Echtenkamp, 2006; von Hippel, Isa, Ma, & Stokes, 2011), research has yet to examine the non-stigmatized group's perceptions of the existence of threat for others, which would advance the growing literature on social identity threat reduction. It is also important to examine men's perceptions regarding gender inequities because research suggests that men tend to be more satisfied with the diversity climate of organizations than women, believing that conditions are adequate and that an inclusive climate has been achieved (Mor Barak, Cherin, & Berkman, 1998). This line of research also finds that men's perceptions of inequity predict their support for organizational measures to rectify gender disparities (Konrad & Hartmann, 2001; Konrad & Spitz, 2003; Tougas & Beaton, 1993), thus my research extends our knowledge regarding the implications of men's awareness of workplace gender issues.

While there is the tendency for men to downplay social inequity in the workplace, there are meaningful individual differences between men that result in some men being supportive of organizational goals to increase equity (Cunningham & Sartore, 2010; Martins & Parsons, 2007;

Tougas & Veilleux, 1990). I examined an individual characteristic that may help shed light on the type of men who see threat versus those who do not. It was proposed that how one thinks about his own social identity groups may influence how aware one is with respect to the social identity plights of others. *Social identity complexity* broadly refers to the extent of cognitive elaboration applied to representing one's multiple ingroup memberships, and high complexity is associated with positive intergroup relations (Roccas & Brewer, 2002). The theory asserts that a multidimensional view of the self engenders more inclusive criteria for determining ingroup members than someone with a one-dimensional sense of self. A multidimensional view of self is demonstrated when an individual accesses important group memberships simultaneously and inclusively. For instance, a white, heterosexual man who is also a parent has an inclusive sense of self when he is able to feel a sense of kinship with anyone who shares any of these attributes, even if an individual does not share any of the other characteristics. That same man has a one-dimensional sense of self if he feels little connection with people who do not share all of the social identities that he deems highly important to his sense of self (i.e. white, heterosexual, parent). I proposed that the more complex a man's social identity structure, the more likely it is that he will view women as ingroup members and be able to recognize identity threats that women face. There is growing literature that seeks to advance our grasp on the dynamics of our multiple and cross-cutting group memberships (Chao & Moon; 2005; Crisp & Hewstone, 2007), and social identity complexity has made a notable contribution to this effort. However, empirical research exploring the nature and correlates of complexity has been limited to the propositions originally proposed by the theories originators, Roccas and Brewer (2002). It is now important to expand the implications for having or not having a complex identity. Social identity threat research on men as sources of threat has only considered how men's sexist attitudes and

behaviors lead to threat (e.g. Logel et. al, 2009). What has not been considered is the notion that how men think about their own various social identities, seemingly independent of explicit attitudes about women, may influence their capacity for seeing identity threats encountered by women. Hence the hypothesized relationship between social identity complexity and men's awareness of threat is of theoretical value.

When men champion diversity by mitigating threat for women, they foster identity safety. *Identity safety* is the theoretical antidote to social identity threat (Markus, Steele, & Steele, 2000; Purdie-Vaughns & Walton, 2011), and it refers to an approach to creating inclusion through interventions designed to buffer threat inducing cues in the environment and enhance stigmatized individuals' sense of social belonging (Purdie-Vaughns & Walton, 2011). Identity safety has been found to mitigate the experience of threat when the organizational or task context is changed such that information provided signifies to individuals that the environment is a safe place for identities susceptible to threat (Davies, Spencer, & Steele, 2005; Purdie-Vaughns et al. 2008). However, we know little about the behaviors that individuals can engage in to promote safety from social identity threat and we know even less about why some people will be more inclined to foster identity safety than others. In order to address these gaps in the literature, and to highlight the relational aspect of identity safety, I examined identity safety behaviors as a positive outcome associated with men who are aware of social identity threat for women.

With respect to the research question concerning the role of men's work environment in determining whether they are motivated upon seeing threat to promote identity safety, I turned to what we know about workplace climate. There are many different types of work climates (Schneider & Reichers, 1983), and some may encourage men to endorse identity safety while others may hinder men from endorsing identity safety. To this end, I investigated whether

psychosocial safety climate creates the conditions under which men who acknowledge threat for women are likely to engage in identity safety behaviors. Psychosocial safety climate speaks to senior management attitude toward and emphasis on the minimization of psychosocial risk in the workplace (Dollard & Bakker, 2010). When proactive steps are taken to reduce workplace stressors, there are positive outcomes for worker motivation (Dollard & Bakker, 2010) and workplace relationships (Bond, Tuckey, & Dollard, 2010). I proposed that when employee psychological and social well-being are a priority, it facilitates a process whereby socially conscious men are motivated to engage in identity safety behaviors, and they can do so openly in service of creating a psychologically safe workplace. Inasmuch as attention to worker social and mental wellbeing has implication for individual level enactment of diversity and inclusion efforts, it is of import to investigate this relationship.

In summary, I was interested in examining the extent to which men in a male-dominated work setting perceive that social identity threatening cues exist for women in their work environment. I was also interested in understanding why some men may perceive an environment as threatening and others may not. The complexity with which a man holds his own social identity was believed to influence the extent to which he sees the identity threats that a woman is exposed to, which in turn was purported to impact the extent to which he engages in identity safety behaviors on behalf of women. Yet, this relationship was proposed to occur in environments that place high value on mitigating the psychological and social risks often found in the workplace; that is, environments that have a high psychosocial safety climate.

This dissertation makes major contributions under the broad umbrella of workplace diversity and relationships. With the ever-increasing diversity of today's workforce, the potential for experiencing social identity threat increases, but so does the opportunity to mollify it. With

waxing interest in securing men's support for gender equity (Flood, 2005; Prime, Foust-Cummings, Salib, & Moss-Racusin, 2012), this dissertation's focus on the qualities of men and their relationship with women in male-dominated settings is timely. Although organizational level threat reduction strategies offer a systemic and systematic point of view, myopic attention at this level misses opportunity to effect change at other levels. Policies and procedures can only do so much to ward off threat. It is also up to individuals to foster relationships with coworkers that promote identity safety (Hicks-Clarke & Iles, 2000). Moreover, the fact that social identity threat as well as identity safety occur in a relational context, in daily interaction with others, (Capodilupo, Nadal, Corman, Hamit, Lyons, & Weinberg, 2010; Sue, Capodilupo, Torino, Bucceri, Holder, Nadal, & Esquilin, 2007) has been background rather than foreground in scholarly research, and I attempted to initiate the close of this theoretical and practical gap.

There is also a methodological contribution of my research. Social identity threat has primarily been examined in academic research labs (Aronson & McGlone, 2009). We owe validation of the causal relationship between cues and social identity threat to well-controlled experimental designs, primarily with college students (Roberson & Kulik, 2007). Scholars have begun to acknowledge, however, the importance of expanding application and empirical research into the workplace (Kray & Shirako, 2011; Roberson & Kulik, 2007), and social and organizational psychologists have started to answer the call (Bergeron et al., 2006; Chung, Ehrhart, Ehrhart, Hattrup, & Solamon, 2010; Roberson, Deitch, Brief, & Block, 2003). My research extended this avenue of inquiry by grounding the examination of social identity threat and identity safety in a work context.

A major practical implication of this study concerns women's entry, retention, and advancement in organizations. There are industries that continue to be dominated by men, as

evidenced by the following percentages: women occupy 29% of production jobs, 25% of computer and mathematics-related occupations, 22% of fishing and forestry occupations, 21% of protective service jobs (e.g. police officer), 15% of transportation jobs, 14% of architecture and engineering occupations, and a mere 2% of construction-related jobs (Bureau of Labor Statistics, 2011). Even in industries where it seems that gender balance is a reality, women are significantly underrepresented at the executive level of organizations. For instance, among Fortune 500 companies, women occupy 17% of board director seats (Catalyst, 2012a), 14% of executive officer roles, 8% of top earner positions (Catalyst, 2012b), and 4% of CEO roles (Catalyst, 2012c). Social identity threat has been noted as a potential contributor to women's underrepresentation in certain industries and leadership positions (Davies et al., 2005; Steele, 1997; Steele et al., 2002). Some women who experience threat make the decision to leave an organization where the environment proves psychologically unsafe (Niemann, 1999). As a result, organizations are at risk of losing top talent and are precluded from realizing the benefits of diversity. Thus, it is vital to create and maintain work atmospheres that prove to value and enhance identity, particularly identities with an attached social stigma, in the effort to maximize performance and ensure social justice in today's global work world.

The dissertation is organized in the following way. The current chapter, Chapter one, has been an introduction to the problem statement, study objectives, and theoretical and practical contributions. Chapter two begins by setting the research context. Then the focus turns to a review of the literature and presentation of the study hypotheses concerning men's sensitivity to social identity threat for women, social identity complexity, identity safety, and psychosocial safety climate.

Chapter 3 lays out the method I used to empirically answer the research questions, and includes an explanation of the research design, sample, data collection strategy, and operational definitions of all variables. The analytic strategy employed for testing the study hypotheses is also presented. Chapter 4 presents the study results. Finally, Chapter 5 discusses the study findings and limitations, and theoretical and practical implications.

CHAPTER II: LITERATURE REVIEW

The Research Context

Although men are the population of study in the current research, the impetus for studying men concerns their role in women's retention and advancement in the workplace, particularly in male-dominated fields and industries. While there are many male-dominated fields on which to potentially focus, I chose to address my research question in the academic community of science, technology, engineering, and math (STEM). The rationale for this decision is three-fold. First, the potential for identity threat for women in STEM is real. Stereotypes associated with women as scientists continue to be noted as contributing to the less than ideal academic climate (Rosser & O'Neil Lane, 2002). Intentional and unintentional bias against women infiltrates the scientific community in such a way that depreciates women's status, ability and contribution (The National Academies, 2006). In academia, women who experience more identity threat and discrimination have more negative job outcomes compared to women who report little discrimination (Settles, Cortina, Malley, & Stewart, 2006). In comparison to male faculty, women feel isolated but struggle to pinpoint causal factors (National Academy of Sciences, 2010). The reservation in making threat attributions with confidence is often due to the ambiguous nature of cues (Castro, Block, Ferraris, & Roberson, 2013; Crocker & Major, 1989) and the subtlety with which they manifest (Capodilupo et al., 2009; Lilia, 2008; Sue et al., 2007). Thus, women who have a passion for the scholarship and application of STEM must try to thrive in an atmosphere where they face the reinforcement of stereotypes by colleagues in subtle and not so subtle forms.

The second reason for the chosen research context is that social identity threat has often been cited as a potential contributor to the leaky pipeline in science-related fields, which refers to the consistent and persistent way in which the representation of women decreases as STEM job

level increases (Blickenstaff, 2005; The National Academies, 2001). Despite considerable growth over the last 35 years in the representation of women scientists in academia across disciplines and education levels (The National Academies, 2001), the pipeline continues to lose women scientists. Compared to the percentage of women who receive Ph.Ds., the percentage of women who apply for tenure-track positions is low; this trend continues at the next career level, with women underrepresented in being reviewed for tenure relative to the percentage of women, who as assistant professors, could potentially go up for tenure (The National Academies, 2010). Thus, as women ascend the academic ladder, the number of their female colleagues with the same status decreases considerably.

At the most research intense institutions, findings suggest that women scientists' opportunities and resources are comparable to men, even slightly better in some circumstances (The National Academies, 2010), yet women are jettisoning the decision to make a career within academia. With overt discrimination being less common, some scholars have made claims that the primary reasons for women's underrepresentation is due to their preferences for non-STEM fields, fertility decisions, and other lifestyle choices (Ceci & Williams, 2011). However, a recent experimental study demonstrated that subtle gender bias in male and female science faculty resulted in a female job applicant being viewed as less competent than an identical male applicant, and because of this the female applicant was offered less money, deemed less hireable and less worthy of mentoring than her male counterpart (Moss-Racusin, Dovidio, Brescoll, Graham, & Handelsman, 2012). The authors implicated such biased judgments and lack of relational and professional support as responsible for tainting women's perceptions of STEM and influencing subsequent career decisions. Thus, more investigation into the low-level factors contributing to women's attrition from STEM is needed.

The third reason for investigating my research question among STEM men is the dedicated and concentrated stream of research that is devoted to understanding and broadening insight into social identity threat for women as it relates to the stereotypes and beliefs about women's inferior ability in math and science. Stereotype threat is a specific kind of social identity threat; it speaks to the negative outcome associated with the fear of confirming a negative stereotype about a self-relevant social identity in a domain of interest (Steele, Spencer, & 2002). The effect of stereotype threat is a decrease in performance under ability testing conditions (Steele, 1997). Claude Steele (1995) became interested in stereotype threat in response to underperformance of certain groups in evaluative testing situations. In the now classic study, he found that African American college students underperformed on a standardized test relative to white students, but only when the test was characterized as a measure of ability. In a meta-analytic review of stereotype threat and evaluative cognitive ability testing of women, Nguyen and Ryan (2008) found that women's performance suffered as a result of threat, and particularly so under the influence of subtle cues. In addition, Castro et al. (2013) found that STEM female academics' experiences with social identity threat often manifested in their everyday interactions with male colleagues. Since there is little room for debate about the existence and prevalence of social identity threat for women in the sciences and related fields, academic STEM readily emerged as an appropriate research context.

Male Sensitivity to Women's Identity Threat

Male sensitivity to women's identity threat refers to the acknowledgement that social identity threatening cues exist in the workplace for women. Although scholars have not explicitly examined men's awareness of threat for women, research on perceived gender inequity and discrimination against women provides insight into what might be found regarding the likelihood

of men's sensitivity to women's identity threat. Evidence suggests that men and women view the severity of gender inequity and discrimination against women differently. For instance, in an undergraduate and graduate school sample, men were found to view gender inequality as less of a social problem and had a narrower view of the issues encompassing gender inequity when compared to women (Israeli & Tabor, 1986). Specifically, while women viewed violence against women, workplace advancement discrimination, and abortion prohibitions as social problems, men only viewed violence against women as a social problem (Israeli & Tabor, 1986). Gender difference in perception has also been explored with various working adult samples. Although both genders are likely to say that men experience less gender-based discrimination than women in the workplace, the amount of discrimination against women perceived by men is significantly less than the amount perceived by women (Gutek, Cohen, & Tsui, 1996; Ngo, Foley, Wong, & Loi, 2003; Shinew & Arnold, 1998). In two samples, senior managers and Ph.D. holding psychologists, Gutek, et al. (1996) found that men perceived less discrimination against women than did women. Similar results were found among male church workers who perceived significantly less gender inequity bias against women than did their female co-workers (Ngo et al., 2003). Finally, in a survey study conducted in the leisure industry, male middle managers were less likely than their female counterparts to say that women were given fewer promotion opportunities (Shinew & Arnold, 1998).

It is clear that men and women perceive the existence of gender inequity differentially. Thus, it is likely that men may also undermine the prevalence of social identity threat faced by women. Explanation for why men may not see social identity threat for women can be gleaned from theories related to intergroup relations. First, given their dominant status, there are motivational reasons for men to not see threat. Occupying organizational positions with the

highest level of authority has given men control over the distribution of resources and granted them more power, autonomy, and access than any other identity group (Alderfer, 1987). Material interest is a powerful reason to ignore the existence of threat (Alderfer, 1987). As such, men are highly invested in maintaining the status quo (Sidanius & Pratto, 1999). In effort to ensure the current imbalance in organizational power, a simple yet effective way is to deemphasize the prevalence and impact of threat.

A second motivational reason to not see threat involves the desire to maintain a positive identity. Social identity theory purports that self-image is in part determined by one's social category memberships and that individuals are motivated to establish and maintain a positive view of self, with a tendency toward ingroup bias (Tajfel & Turner, 1986). In addition, upper management, because of its desire to be seen in a positive light, is more interested in perpetuating positive rather than negative narratives (Alderfer, 1987). It is therefore in men's psychological interest to minimize the existence of threat. Admitting to or becoming aware of the threats faced by women could be accompanied by undesirable affective outcomes such as guilt and shame (Alderfer, 1987). Moreover, should seeing threat also entail acknowledging male privilege, the level of difficulty in abandoning denial becomes more intense as awareness makes one "newly accountable" (McIntosh, 1988).

The final argument regarding the likelihood of men's sensitivity to women's identity threat is the notion that men do not see threat out of an inability to see the world outside of their own view. They are, in effect, ignorant to its existence because they have never experienced it for themselves or had the wherewithal to make sense of an experience as a threat to social identity (Konrad & Hartmann, 2001). In addition, it is not uncommon that men take for granted their privileged position and assume that they represent the average person and that others share

their same experience (Konrad & Spitz, 2003; McIntosh, 1988). This phenomenon may or may not involve motivational forces, but it does pose a practical reason for why men may not see that social identity threatening cues exist at a systemic level for women.

Despite men being less likely to perceive gender inequities in comparison to women, and being motivated to not see threat, there are gender-conscious men who not only recognize that social identity threat exists but take measures to address it (e.g. NOMAS). Even scholars have noted that the way in which individuals enact identity is a function of not only group and outgroup expectations, but personal expectations as well, which may differ from that of their ingroup (Alderfer, 1987). It is interesting then that more has not been done by researchers to better understand how some men come to have a sophisticated view of gender issues. Next, I describe social identity complexity as a possible determinant of male sensitivity to women's identity threat.

Social Identity Complexity

Identity is undoubtedly a central theme of the proposed research, and it is best conceptualized with “reference to parts of a self composed of the meanings that persons attach to the multiple roles they play in a highly differentiated contemporary society” (Stryker & Burke, 2000, p. 284). In addition to roles, one's social category memberships that are deemed representative of the self also constitute identity components infused with meaning (Deaux, 1993). Because we all play multiple roles and have multiple social category memberships, the notion of multiple identities is a natural extension of the identity conversation (Stryker & Burke, 2000).

Despite the reality and importance of multiple identities, social psychology research in the area of intergroup relations has typically focused on a singular dimension, such as gender or

race (Roccas & Brewer, 2002). In recent years, however, “research on multiple social categorization has found that our many and varied, cross-cutting and convoluted, social identities have significant implications for understanding, and attenuating, prejudice and intergroup discrimination” (Crisp & Hewstone, 2007, p. 163). Building on this trend, Roccas and Brewer (2002) developed the concept of social identity complexity, which concerns the degree to which individuals represent multiple ingroup memberships as divergent aspects of a multifaceted and inclusive self as opposed to representing multiple ingroup memberships as converging on a single exclusive identity.

Roccas and Brewer (2002) view the process of managing multiple ingroup identities as characterized by differentiation and integration. *Differentiation* refers to the level of recognition given to the distinctions, incompatibilities, and inconsistencies between ingroup identities, as opposed to efforts made to ignore or deny the potential conflicts between the beliefs, values, and meanings attached to certain roles and category memberships. *Integration* refers to the level of effort made toward reconciling the acknowledged differentiation between ingroup identities. High social identity complexity includes the optimization of both differentiation and integration. Based on this view, Roccas and Brewer (2002) described four cognitive alternatives, moving from low complexity to high complexity, by which individuals can represent their multiple social groups (Figure 1). After defining each alternative, an example is presented using two ingroup identities, gender and occupation, which are highly relevant to the current research’s population of interest, male scientists in STEM academe.

The first option, and least complex representation, is termed *intersection*, and refers to representing identity as the intersection of one’s multiple ingroups (Roccas & Brewer, 2002). Both levels of differentiation and integration are low. Differentiation is low because

inconsistencies in the meaning conferred by one identity group and the meaning conferred by another identity group are suppressed. Instead, focus is subjectively placed on what the two identity groups have in common. For instance, a male scientist exemplifying intersection views himself as the commonalities between being male and being a scientist. The implication with respect to intergroup relations is that he only identifies with other male scientists, and anyone who does not simultaneously hold both identities is considered an outgroup member (e.g. women scientists, male nonscientists). As a result, an identity based on intersection is highly exclusive because as the relevant number of meaningful ingroup identities increases, the potential number of ingroup members reduces drastically.

The second least complex identity representation alternative is *dominance* (Roccas & Brewer, 2002). Dominance is characterized by prioritizing one identity over all others. Thus, a single identity is well differentiated from others and integration is minimal. Using the male scientist example, dominance would reveal itself as an individual perceiving himself as a man or a scientist. In the case of his gender identity being dominant, anyone not male would be considered an outgroup member. Thus, all women, including women scientists, would be considered outgroup members. If a male scientist claims his scientist identity as dominant, anyone who is a scientist, regardless of gender, would be perceived as an ingroup member. It would seem that in this case dominance is not a problem since women scientists are not excluded as ingroup members. However, dominance is still not ideal since hierarchical representation of one's identity subgroups cannot be ruled out. Scientist may be the superordinate identity, but an individual may have more or less positive evaluations for his scientist ingroup members based on the type of scientist. Thus, a male scientist may view all other scientists as ingroup members, but may identify more closely with other male scientists over female scientists. In other words, non-

dominant identities do not become equalized or irrelevant, but are considered as background to the dominant identity's foreground.

The third identity representation alternative is more complex than both intersection and dominance. In *compartmentalization*, multiple identities are differentiated, but not well integrated, meaning that they are not represented simultaneously across contexts (Roccas & Brewer, 2002). As a result, the way in which an important identity becomes chiefly represented is context or situation specific. For instance, although a male scientist may view his gender and professional identities as important, his professional identity may be the primary basis for his social identity in the workplace thereby making his scientist ingroup most relevant in that context. When he is at home, however, his gender becomes the basis of his sense of self and his maleness takes precedence. Compartmentalization is not the most complex option because it does not allow all important identity groups to be activated simultaneously, which implies that the same person can be an ingroup member to someone who compartmentalizes but then can be an outgroup member as a result of a shift in context. For example, a man who exhibits compartmentalization would perceive a woman scientist as a peer during a science conference, but if she decides to go out to dinner with a few of her male colleagues following the conference, the compartmentalizing male scientist may then think of her and treat her as an outgroup member due to the shift in context from the professional to the extracurricular.

The final alternative, and most complex structure, is *merger* (Roccas & Brewer, 2002). Individuals who merge display a high level of differentiation with respect to multiple ingroup memberships and a high level of integration. This representation strategy is the most diverse and inclusive because all relevant social groups are continuously activated. As such, anyone who shares at least one identity group with the merger, is considered an ingroup member, despite the

fact that he or she may be an outgroup member on other relevant identities. As the number of ingroup identities increases, the fewer dimensions exist for making ingroup-outgroup distinctions. In the case of our male scientist, both gender and profession are meaningful. At the same time, he does not merely focus on the overlap in meaning, values, and beliefs associated with being a man and being a scientist, as someone who intersects would, but he embraces the converging and discriminant elements of what it means to be a man and what it means to be a scientist. Thus, all men, regardless of profession, and all scientists, regardless of gender, are ingroup members.

It is important to note that these four cognitive structures are not alternatives in a stage model of complexity nor do Roccas and Brewer (2002) purport to measure for these alternatives. Rather, intersection, dominance, compartmentalization, and merger are ways to think about gradations of complexity and they are a reflection of our extant knowledge concerning multiple social categorization. In fact, these structures likely “differ more in degree than in kind” (Roccas & Brewer, 2002, p. 92). Much is dependent upon the size and heterogeneity of the social category or categories one deems important. For instance, a father who most connects with other men who are also fathers is engaging in intersection (i.e. male and parent), the least complex alternative, and a male scientist whose only important ingroup is ‘scientist’, is exhibiting dominance, an alternative said to be more complex than intersection. In reality, however, ‘father’ is the intersection of two sizeable and heterogeneous groups, while ‘scientist’ is indicative of a much smaller and exclusive social category. Thus in this instance, intersection appears to be the more complex alternative than dominance. If, however, one compares a father exhibiting intersection and a man exhibiting dominance by way of his primary ingroup being ‘parent,’

dominance is indeed more complex in this case because ‘parent,’ which includes women, is a broader and more heterogeneous social category than ‘father,’ which excludes women.

Propositions of social identity complexity. Roccas and Brewer (2002) made a number of propositions concerning antecedents of social identity complexity, categorizing them into experiential, personal, and situational factors. Stable factors related to experience that were asserted to influence complexity include societal structure and objective similarity between one’s ingroups, both having to do with intergroup contact. For individuals exposed to homogenous environments, social identity complexity was expected to be limited due to minimal contact with diverse others, thus reducing the need to deal with identity contradictions, and concomitantly, reducing the need to integrate identity tensions. Several personal attributes in the form of needs and values were also proposed to affect complexity. Cognitive style in general, and more specifically, one’s “chronic need to create and maintain a simple structure” (Roccas & Brewer, 2002, p. 97) when confronted with ambiguous and heterogeneous information was propositioned to predict low complexity, the rationale being that if an individual has difficulty dealing with complexity and ambiguity with respect to information, then this would extend to difficulty holding onto the complexity of one’s ingroup memberships. Values expected to negatively impact accessibility to a complex identity were conservatism and power, the former because of its emphasis on avoiding instability and uncertainty, and the latter because of its emphasis on self-interest and maintenance of social hierarchies. On the other hand, values expected to positively impact complexity were openness to change and universalism, the former because of its acceptance of ambiguity, and the latter because of its attention to equity and the welfare of others (Roccas & Brewer, 2002). Finally, several situational factors were propositioned to affect complexity. Since a complex social identity structure requires mental resources and cognitive

effort, high demands on attention was proposed to negatively impact complexity. In situations where a particular ingroup is very distinctive (e.g. a woman in a room of men), that identity is likely to dominate and obscure the nuances between one's various ingroups, leading to reduced complexity. Stress was also identified as a situational factor likely to predict complexity because it compromises one's cognitive resources and capacity for managing ambiguity. Ingroup threat was the last situational attribute proposed to affect complexity. When an identity is threatened, stress levels rise, and the threatened identity is likely to become dominant as other identities become less differentiated, resulting in decreased complexity.

Roccas and Brewer (2002) delineated propositions regarding ingroup favoritism, outgroup tolerance, and outgroup affect as primary consequences of social identity complexity. They reasoned that because high complexity deemphasizes ingroup-outgroup boundaries, individuals with a complex representation of ingroups would exhibit reduced ingroup favoritism, higher outgroup tolerance, and more positive affect toward outgroups relative to individuals with a simple representation of ingroups.

Because social identity complexity is a relatively new construct, the body of empirical literature testing the aforementioned propositions is modest. However, the research that does exist portends promise for the validation of social identity complexity as an important construct to our understanding of intergroup relations. To date, there have been four published studies, including Roccas and Brewer's (2002) seminal investigative article. In the following section, I describe each study in some detail to highlight the operationalization of social identity complexity and discuss the progress made toward testing its theoretical propositions. I end the section by discussing the implication of findings for the relationship between complexity and male sensitivity to women's identity threat, culminating in the first study hypothesis.

Operationalization and validation of social identity complexity. Because Roccas and Brewer (2002) took a cognitive representation approach to conceptualizing social identity complexity, they operationalized it in a similar way. There are two dimensions along which ingroup identities can be perceived as being highly correlated. The first is prototypic representation, which reflects the perceived overlap of beliefs, values, and norms between various ingroups. When the attributes of one's ingroups are subjectively viewed as very similar, even when there are objective differences, then this signifies a simple identity structure on this index. Conceptually, it says that a person minimally differentiates and integrates the value systems of various social identities. Operationally, it involves answering the question of whether the average set of characteristics associated with the typical ingroup member 'A' are the same as the average set of characteristics associated with being a typical ingroup member 'B'. Following through with the male scientist example, prototypic representation may appear as the extent to which the male scientist views similarity between the beliefs, values and norms of being male and the beliefs, values and norms of being a scientist. The more similarity that is perceived, the less complex is the identity structure.

The second dimension is numerical representation (Roccas & Brewer, 2002), which reflects the perceived overlap in the membership of different ingroups. Whereas prototypic overlap concerns the content of group representation, numerical overlap concerns the representation of group composition. The more overlap in membership that is perceived, the less complex is the identity structure. Conceptually, it says that a person minimally differentiates and integrates the compositional boundaries of various social identities. Operationally, it involves answering the question of how many people who are ingroup member 'A' are also ingroup member 'B'. For the male scientist, numerical representation may appear as the extent to which

he perceives that all men are scientists and all scientists are men. These two indexes, prototypic representation and numerical overlap, are two distinct ways in which the relationships between ingroups can be represented, and were found to be positively but not significantly correlated (Roccas & Brewer, 2002). Thus, it is possible for an individual to be high on one index and low on the other. For example, a male scientist may know that not all atheists are scientists, and yet may perceive the attributes of scientists and atheists to be similar, and by extension, their members.

In their initial investigation on social identity complexity, Roccas and Brewer (2002) conducted two studies, using samples in the U.S. and Israel, to test a number of hypothesized relationships. Using a survey methodology, the first phase of each study asked an undergraduate college student population about important social group memberships. From these responses, a subsample was determined based on self-reported importance of four ingroups. For the U.S. sample, individuals who identified White, American, college student, and religious denomination as important ingroups were selected. For the Israeli university student sample, the subsample consisted of students who identified as secular, Israeli, a college student, and Jewish. Social identity complexity was measured based on all pairings of the ingroups using a series of questions to calculate prototypical and numerical representation overlap scores. The series of prototypical representation questions asked to what extent did a participant agree that a typical member of one group (e.g. college student) was highly similar to the typical member of another group (e.g. American). The series of numerical representation questions asked participant perception of the degree of membership overlap between each ingroup pair.

The propositions under study included those regarding values of openness, power, conservatism and universalism. The relationship between social identity complexity and the

situational variables of stress-related mood and ingroup threat were also tested. Outgroup tolerance was examined as the outcome variable of interest. Overall, Roccas and Brewer (2002) found support for their hypotheses. With respect to needs and values, those with high social identity complexity were also likely to be open to change and to have a universalism value orientation. Those with low social identity complexity possessed values favoring conservatism and power¹. As expected, the situational factor of stress-related mood was negatively correlated with complexity. As stress-related mood increased, social identity complexity decreased. Ingroup threat also had the predicted effect. Participants in the high threat condition showed significantly less identity complexity than participants in the low threat condition, and the difference remained even when stress-related mood was taken into account. All results were true for both samples and complexity indexes; however a difference emerged with respect to outgroup tolerance. For the Israeli sample, prototypical and numerical overlap indexes made distinct and significant predictions of outgroup tolerance. For the U.S. sample, only the numerical overlap index significantly predicted outgroup tolerance; although not significant, prototypical overlap did correlate with tolerance in the expected direction (i.e. low tolerance was associated with low complexity).

Brewer and Pierce (2005) reexamined the link between the numerical overlap index of social identity complexity and outgroup tolerance in a White adult sample (median age = 47) of Ohio residents. American was the constant ingroup across participants, while the other three ingroups used to measure social identity complexity depended on the identities deemed important by each respondent. The ingroups from which participants could choose as important

¹ Values were measured using the Schwartz Value Inventory (Schwartz, 1992). Each was calculated as the average importance placed on the values constituting each value dimension. Example constitutive values for each value dimension were: *openness* – creativity, freedom, independence, curiosity, a varied life; *conservatism* – devout, respect for tradition, national security, social order; *power* – social power, wealth, authority; *universalism* – equality, social justice, broad-minded, unity with nature.

were religious affiliation, occupational identity, political or fraternal organization, sports fanship, and ethnic/national identity. Thus, each participant received a tailored version of the survey and this allowed for the assessment of social identity complexity using idiosyncratic ingroup information. Outgroup tolerance was operationalized using a scale measuring attitudes toward public policy issues of affirmative action and multiculturalism, and a scale measuring affect toward a number of groups. Intergroup contact was also assessed in line with the proposition that certain experiential factors are antecedents to social identity complexity. Demographic information, including age, gender, education level, and political ideology was also collected. With respect to the demographic variables, social identity complexity was positively correlated with age and education. In addition, more conservative respondents were lower in social identity complexity than more liberally identified respondents. After controlling for the effects of age, education and political ideology, higher social identity complexity was related to more positive attitudes towards affirmative action and multiculturalism and more positive affect towards outgroup members. In addition, post-hoc analyses revealed that the ingroups chosen by respondents had little effect on social identity complexity's impact on outgroup tolerance. For instance, even when ethnic/national identity was removed from the overlap index score of individuals who chose it as an important ingroup, complexity with respect to the remaining three ingroups still predicted attitudes toward ethnic pluralism. Although intergroup contact independently predicted attitudes toward affirmative action, it was not significantly related to social identity complexity, about which the authors were not surprised given the sample's low mean and limited range on contact scores (Brewer & Pierce, 2005). Brewer and Pierce (2005) concluded that their findings support the broad goal of identifying how multiple social identities influence intergroup relations, and more specifically, how one's own thoughts about personal

cross-cutting group memberships also says something about one's reactions to diversity and inclusion writ large.

The most recent investigations into social identity complexity took place in 2009. Miller, Brewer, and Arbuckle, conducted three studies to build on previous research concerning antecedents and correlates of identity complexity. Study one replicated the relationship between political ideology and complexity and found that as liberalism increased so did complexity. As previously mentioned, Roccas and Brewer (2002) propositioned that cognitive style as it relates to proclivity toward one's comfort level in managing complex and ambiguous information would be associated with complexity. Miller et al. (2009) began to address this by investigating several variables of cognitive style as correlates². Results showed that need for cognition, defined as actively seeking cognitive activity and stimulation, predicted high social identity complexity. In terms of consequences, when controlling for ideology and need for cognition, overlap scores significantly predicted explicit and implicit measures of interracial affect and racial attitudes such that low complexity was associated with more negative affect and unfavorable racial attitudes relative to those high in complexity.

Study two by Miller et al. (2009) was designed to further explore the relationship between identity complexity and need for cognition by seeing if a situational manipulation of cognitive style would affect complexity. Using an experimental design, the researchers manipulated the extent to which respondents were encouraged to use cognitive effort in thinking about how their self-selected ingroups overlapped with respect to membership composition. When completing the numerical overlap measure, participants were either provided with instructions to think carefully and be as accurate as possible in assessing overlap (i.e. high

² These included need for cognition (Cacioppo, Petty, & Kao, 1984), and discomfort with ambiguity and close-mindedness dimensions of need for closure (Webster & Kruglanski, 1994).

elaboration condition), or they were provided with instructions to not put too much thought into selecting an answer and to respond quickly (i.e. low elaboration condition). The high cognitive elaboration condition resulted in higher social identity complexity scores than the low cognitive elaboration condition, suggesting that need for cognition is a causal factor determining the extent of overlap one perceives among ingroup memberships.

The third study by Miller et al. (2009) tested the relationship between interethnic contact and complexity with the prediction that experience with diversity would be positively related to complexity. Brewer and Pierce (2005) examined this potential relationship and did not find one; however, they hypothesized that the finding may have been an artifact of the sample (i.e. low mean on outgroup contact coupled with minimal variance among participants) rather than an accurate assessment of the relationship. Miller et al. (2009) sampled a more diverse subset of Ohio residents than did Brewer and Pierce (2005), increasing the likelihood of variance with respect to intergroup experiences and in turn increasing the opportunity to detect a relationship. Indeed, as the self-reported number of ethnic/racial groups living in a respondent's neighborhood increased, so did social identity complexity. Furthermore, experience with diversity significantly predicted complexity. Given the sum total of their findings, Miller et al. (2009) reasoned that social structures in the environment as well as individual values and needs are in fact important determinants of social identity complexity.

Schmid, Hewstone, Tausch, Cairns, and Hughes (2009) added to the empirical knowledge base of social identity complexity by conducting two studies, drawing from Roccas and Brewer's (2002) propositions concerning intergroup contact and ingroup threat as antecedents to complexity. The specific ingroup threat under investigation by Schmid et al. (2009) was distinctiveness threat, which occurs in situations where differentiation between an

outgroup and a valued ingroup is unwantedly minimized, thereby threatening the distinctiveness or uniqueness of one's ingroup. In the first study, in addition to completing measures of distinctiveness threat and intergroup contact, and measures for the proposed outcome variables (i.e. ingroup bias and outgroup tolerance), a sample of college students from two universities in Northern Ireland completed a measure of prototypical complexity in which ethnicity and religious affiliation were the specified ingroups (e.g. "A typical Catholic is very similar to the typical Irish person in Northern Ireland."). Results suggested that students with greater outgroup contact had more outgroup tolerance and less ingroup bias than participants with less outgroup contact, and this relationship was mediated by social identity complexity. Additionally, students more prone to distinctiveness threat exhibited less outgroup tolerance and more ingroup bias than participants less susceptible to distinctiveness threat, and this relationship was most true for students who highly identified with their ethnoreligious ingroup. Again, the relationship was mediated by social identity complexity such that high distinctiveness threat was associated with lower social identity complexity, which in turn increased ingroup bias and decreased outgroup tolerance, particularly for highly ethnoreligious students.

Schmid et al.'s (2009) second study sought to replicate the findings of their first study using a representative adult sample drawn from six towns in Northern Ireland. However, the study included two modifications. First, rather than only examining prototypical complexity, the authors also included a measure of numerical overlap. Second, only ingroup bias was assessed as the outcome variable, rather than ingroup bias and outgroup tolerance. Results confirmed the findings of study one; prototypical complexity mediated the negative relationship between intergroup contact and ingroup bias, and complexity also mediated the positive relationship between distinctiveness threat and ingroup bias. Likewise, numerical overlap complexity

mediated the negative relationship between intergroup contact and ingroup bias; complexity also mediated the positive relationship between distinctiveness threat and ingroup bias. Overall, Schmid et al.'s (2009) findings mimicked the extant research on social identity complexity.

In summary, the collective empirical work on social identity complexity substantiates its validity as a construct having significant implications for intergroup relations. Using a variety of samples, complexity has been found to predict outgroup affect, explicit and implicit outgroup bias, outgroup tolerance, and ingroup bias. Thus, a differentiated representation of one's multiple ingroups has a positive influence on one's attitudes toward outgroup members.

Given that the circumference of one's ingroup members increases as complexity increases, so does one's acknowledgment of the diversity in experiences of ingroup members (Roccas & Brewer, 2002). When men view women as ingroup members, the interests of women also become the interests of men. Looking to affirmative action research for backing, the perceived impact of affirmative action policies on self-interests has been shown to predict attitudes toward such policies (Harrison, Kravitz, Mayer, Leslie, & Lev-Arey, 2006; Konrad & Hartmann, 2001); when men do not see a threat to their self or collective group interests, support for affirmative action is bolstered (Harrison et al., 2006). Since social identity complexity has a positive relationship to support for affirmative action, and belief in discrimination for women is a predictor of attitudes toward affirmative action, it is fair to assert that social identity complexity will have a positive relationship with male sensitivity to women's identity threat. Finally, the potential threat to distinctiveness that men low in identity complexity may experience when attempts are made to ensure equality in the value and status of men and women, is likely to be a nonissue for men high in social identity complexity (Schmid et al., 2009), thereby freeing them up to recognize threats in the environment for women.

Hypothesis 1: Social identity complexity will predict men's sensitivity to the identity threats faced by women such that there will be a positive relationship.

Identity Safety

While it is necessary to identify the precursor to men's sensitivity toward seeing threat for women, it is equally valuable to consider the consequence of acknowledging threat for women. For this, the social identity threat literature provided a ready candidate. *Identity safety* was first conceptualized by Markus, Steele, and Steele (2000) as a model for achieving inclusive climates for minority groups in public settings, such as schools and the workplace. An alternative to the colorblind approach to diversity – minimization of intergroup differences with the goal of treating everyone the same because demographic markers are purported to not matter – the identity safety approach asserts that in order to reduce social identity threat and its negative consequences for stigmatized groups, differences need to be recognized and framed as valuable to the intellectual and creative advancement of the collective. Potential threats to identity like stereotypes and devaluation are neutralized through engagement of behaviors and establishment of practices that debunk sociocultural myths and narratives of stigma. Stigmatized individuals are assured of their belongingness in a setting when expected and required standards are equal to the standards placed on dominant group members. Thus, identity safety behaviors challenge everyone while providing supportive structures to ensure success (Steele et al., 2002).

Picture an academic setting where a male professor is teaching an advanced physics course and there are five female students in a class of twenty. If the professor poses questions to the class and only picks on men for the answers, regardless of whether women raise their hand, this may pose a threat to the women as it could be a sign that the professor does not expect women to know the answer or that he devalues their presence. Behavior by the professor

demonstrating identity safety may include him not only calling on both women and men to respond, but validating the intelligence of all students and expressing the importance of diverse contributions. Without putting the female students on the spot, the professor has reinforced their legitimacy and fostered a climate that respects differences and has the same intellectual expectations for everyone.

Purdie-Vaughns and Walton (2011) also positioned identity safety as an approach to diversity and inclusion and further refined the model. They delineated two general strategies that can be employed by organizations and individuals to achieve identity safety. First, the unique identity threatening cues for a minority group in a particular setting need to be identified, and then changed so that they lose their threatening potential. In an empirical study, Purdie-Vaughns et al. (2008) did just this with African-American job seekers. At a job fair, African-American professionals were exposed to an organizational brochure with a high minority representation and a company philosophy of valuing diversity (i.e. identity safety condition), or they were exposed to a brochure with a low minority representation and a statement of company philosophy supporting a colorblind approach to diversity (i.e. threatening condition). In the identity safety condition, participants expressed a high level of trust in the organization, believed that the organization would value minorities, and anticipated a high sense of belonging were they to work in the company. Participants in the threatening condition reported more threat and lower institutional trust. The study findings demonstrated the effectiveness of identity safety measures.

The second strategy for increasing feelings of identity safety in stigmatized individuals is to secure a sense of social belonging in the setting (Purdie-Vaughns & Walton, 2011). Individuals can be acutely aware of the stigma attached to a self-relevant social identity group (Pinel, 1999), and this can in turn exacerbate threat outcomes (Brown & Pinel, 2003). When an

individual experiences negative outcomes, sense of value and belonging can deteriorate. Purdie-Vaughns and Walton (2011) suggested normalizing adversity and doubts about belonging as part of the human experience during major life transitions. When first year college students were told most students have doubts about social belonging and that the feelings eventually dissipate as one acclimates, stigmatized individuals were able to retain feelings of belonging, and their engagement in achievement activities increased (Walton & Cohen, 2007). Another type of belonging, beliefs about belonging in the domain of mathematics, has important implication for women's retention in STEM. The promotion of an identity safety environment through pedagogy emphasizing an incremental view of intelligence, rather than a fixed view, can preserve women's sense of belonging and their continued pursuit of math related endeavors (Good et al., 2012).

Other identity safety behaviors have also been tested. Explicit negation of stereotypes has proven to be an effective method for neutralizing identity threat. When women had the opportunity to take up a leadership role or a problem-solver role and were informed that despite typical conceptions of gender differences in leadership, men and women perform equally well as leaders on the task at hand, women were just as likely to take up the leadership role as men and were significantly more likely to take up the role than women who were not given the same identity safety establishing information (Davies et al., 2005). An interpersonal identity safety intervention was used when women expected to work with a male partner who was nonsexist as demonstrated by his strong disagreement with sexist beliefs (Kaiser, Vick, & Major, 2006). Women in the identity safety condition were less vigilant to subliminal cues that threatened social identity when compared to women in the high threat condition; the authors raised the issue of how monitoring for threat depletes attention resources that could be used for other activities that have significance for job performance (Kaiser et al., 2006).

Based on this literature review, support for identity safety as behaviors that facilitate the inclusion of stigmatized individuals is clearly mounting. However, despite identity safety being framed as a construct that can be demonstrated by an individual in interpersonal interactions or by an organization through structural and procedural elements (Markus et al., 2000; Steele et al., 2002), empirical studies have tended to examine it as a function of the latter by changing the organizational or task context such that cues signifying safety were provided, which mitigated the experience of threat (Davies et al., 2005; Purdie-Vaughns et al. 2008). For the purpose of this study, I focused on the lesser emphasized behaviors of individuals, rather than organizations, that foster identity safety for others. As the literature reviewed suggests, there are a number of interventions that can be employed to engender identity safety for marginalized individuals. Endorsing nonsexist behavior, role modeling, mentoring, instilling a malleable view of intelligence, affirming ability, reinforcing belongingness, refuting stereotypes, and setting high expectations while providing nonjudgmental support are all theoretical or empirically validated ways to foster identity safety, and all of them can be enacted by individuals.

I proposed that the desirable consequence of identity safety endorsement through one's behaviors must be preceded by awareness that such behaviors are needed. Before one can mitigate social identity threat for others through identity safety, one has to be aware of and acknowledge the existence of threat, which is the essence of male sensitivity to women's identity threat. Support for this notion can be found in the extensive research conducted on attitudes toward affirmative action. Affirmative action strategies "attempt to redress or reduce historical forms of discrimination based on demographic distinctions among employees" (Harrison et al., 2006, pp. 1013), which can be likened to identity safety actions taken by individuals to reduce threatening experiences, including discrimination, for historically marginalized demographic

groups; both are attempts to create equitable and inclusive organizations. Research suggests that men in general are less likely to support affirmative action policies than women, and that a significant predictor of this pattern is the belief that discrimination against women in the workplace exists (Konrad & Hartmann, 2001; Konrad & Spitz, 2003; Tougas & Beaton, 1993). Also, belief that discrimination exists for stigmatized groups in general has a positive relationship with affirmative action attitudes (Harrison et al., 2006). Thus, awareness of gender inequities is a notable prerequisite for favoring actions to equalize the status of women and men. It stands to reason then that recognition of social identity threat for women is an antecedent to engaging in behaviors that protect women from such threat.

Hypothesis 2: Men's sensitivity toward women's social identity threat will predict endorsement of identity safety behaviors such that there will be a positive relationship.

I also proposed a direct relationship between social identity complexity and identity safety endorsement. Social identity complexity has been found to have positive ramifications for intergroup relations. Specifically, high social identity complexity positively predicted tolerance toward outgroups and affect toward outgroups (Brewer & Pierce, 2005; Miller et al., 2009; Roccas & Brewer, 2002; Schmid et al., 2009). In addition, complexity predicted support for affirmative action and multicultural policies (Brewer & Pierce, 2005), an indication for intergroup relations that goes beyond outgroup tolerance and affect to suggest that identity complexity is linked to support for behaviors that seek to rectify inequity and create inclusion. Furthermore, outgroup tolerance in the form of sexual non-prejudice was found to have a positive relationship with behaviors that championed diversity initiatives (Cunningham & Sartore, 2010). Since social identity complexity is a precursor to outgroup tolerance and championing diversity initiatives is a consequence of outgroup tolerance, then it makes sense to

hypothesize that social identity complexity may predict endorsement of behaviors that minimize social identity threat.

Hypothesis 3: Social identity complexity will predict endorsement of identity safety behaviors such that there will be a positive relationship.

In hypothesis 1, I made the claim that a complex social identity structure facilitates an awareness of and sensitivity to social identity threatening cues that exist for women in the work environment. In hypothesis 2, I made the claim that an awareness of and sensitivity to social identity threatening cues that exist for women in the work environment fosters intentions to ameliorate such threats through identity safety behaviors. In hypothesis 3, I made the claim of a direct relationship between having a complex social identity structure and ameliorating social identity threats for women through identity safety behaviors. Given these suggested relationships, I also made the claim that male sensitivity to social identity threatening cues against women would mediate the proposed positive relationship between social identity complexity and the endorsement of identity safety behaviors.

Hypothesis 4: Social identity complexity will predict endorsement of identity safety behaviors via men's sensitivity toward women's identity threat.

Psychosocial Safety Climate

The final research question that I attempted to address in this dissertation is when men have a complex identity structure and are sensitive to the threat faced by women, *what role might the work environment play in determining whether they minimize threat for women?* The power of the organizational context to influence behavior cannot be underestimated (Lewin, 1939), and it behooves researchers to continue to shed light on the role of climate in moderating when certain factors predict work-related behavior. Thus, to best understand the proposed relationship between social identity complexity, seeing threat for women and doing something about it, it is

important to examine the conditions under which endorsing identity safety behaviors is most likely to occur.

Climate research in organizational psychology has emphasized and demonstrated how the work environment can contribute to individual and group behavior (Schneider & Reichers, 1983). Individual perception of work unit climate, also known as psychological climate, has been shown to affect work outcomes such as employee motivation and performance (Parker, Baltes, Young, Huff, Altmann, LaCost, & Roberts, 2003). Climate is facet specific, meaning that a discussion about climate without discussion about a climate ‘for what’, is essentially useless (Schneider & Reichers, 1983). I argued that a climate for the minimization of psychological and social risk in the workplace, called psychosocial safety climate (PSC), is one such facet that has the potential to mean the difference between seeing threat and mitigating threat for women (Dollard & Bakker, 2010).

PSC speaks to the importance paid to the psychological health of employees by organizational leaders (Dollard & Bakker, 2010), and consists of four dimensions: (1) senior management commitment and support for stress prevention; (2) priority given to psychological health versus productivity goals; (3) reciprocal communication concerning psychological safety; (4) and involvement by managers and workers toward psychological health and safety procedures. PSC has close ties to the job-demands resources (JD-R) model of burnout (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). The JD-R model assumes that high job demands and lack of job resources are the primary factors leading to burnout, which is characterized as emotional exhaustion, cynicism toward work and disengagement from one’s job (Demerouti et al., 2001). Job demands include “physical, social, or organizational aspects of the job that require sustained physical or mental effort and are therefore associated with certain

physiological and psychological costs” (Bakker, Demerouti, & Euwema, 2005, pp. 170). Job resources consist of the “physical, psychological, social, or organizational aspects of the job that (a) are functional in achieving work goals, (b) reduce job demands and the associated physiological and psychological costs, or (c) stimulate personal growth and development.” (Bakker et al., 2005, pp. 170)

The JD-R model is driven by a dual process: (1) a health impairment process wherein excessive job demands, such as psychological and emotional demands, can exhaust worker’s mental resources contributing to problems such as anxiety, burnout, and depression; and (2) a motivational process whereby job resources have motivational potential to promote high work engagement, low cynicism, and improved performance. (Hall, Dollard, Winefield, Dormann, & Bakker, 2012, pp. 2)

Studies have supported the validity of the JD-R model such that job demands predict emotional exhaustion and other physiological and psychological health issues, and lack of job resources predict various manifestations of work disengagement (Bakker & Demerouti, 2007). PSC is an extension of the JD-R model viewed as an institutional level resource within the health impairment process of the JD-R model. Through a number of recent studies, hypothesized direct or moderating effects of PSC on psychosocial risk factors has been supported (Dollard & Karasek, 2010). Research results showed that high PSC levels predicted reduced job demands including work pressure, role conflict, emotional demands, and workplace victimization; increased job resources in the form of supervisor support, decision authority, procedural justice, and organizational rewards; less burnout; higher employee engagement; and increased performance (Bond, Tuckey, & Dollard, 2010; Dollard & Bakker, 2010; Idris et al., 2011; Law, Dollard, Tuckey, & Dormann, 2011).

PSC has also been identified as a moderator of several relationships. Senior leader remediation of psychosocial hazards in the workplace has been found to moderate the positive relationship between emotional demands and psychological health problems (Dollard & Bakker, 2010), and there is evidence that PSC buffers the effects of job demands on depression, depression on employee engagement and job satisfaction (Hall et al., 2012), negative customer behaviors on employee negative affect (Zimmermann, Dormann, & Dollard, 2009), and bullying and harassment on engagement (Law et al., 2011). In addition, among a sample of Australian police officers, even if workgroup environments had emotional resources available to employees for dealing with emotional stress, only in high PSC workgroups did emotional resource availability buffer the effect of emotional distress on psychological health (Dollard, Tuckey, & Dormann, 2012). Mediation support has been found for PSC's influence on psychological health by way of job demands (Idris, Dollard, Coward, & Dormann, 2012; Law et al., 2011); PSC's relation to engagement via job resources (Law et al., 2011); and PSC's influence on performance by way of job resources and engagement (Idris et al., 2011).

PSC as a lead indicator and moderator of psychological risk factors is demonstrable. The enacted values of management concerning the reduction and management of work stress factors are an upstream resource with downstream implication for worker psychological health, behavior towards co-workers, engagement, and performance. A strong PSC acts as a signal to employees that freedom from psychological harm is just as important as productivity (Dormann et al., 2012), thereby setting behavioral expectations regarding interpersonal interactions (Law et al., 2011).

When academic administrators put policies and practices in place that limit psychological harm and encourage behaviors that promote psychological health, women susceptible to social

identity threat are likely to benefit in numerous ways. One potential way that it benefits women is through the positive impact I proposed it has on men's likelihood of engaging in identity safety behaviors, addressing the need to examine more positive effects of PSC (Idris et al., 2011). It is not taken for granted that men high in social identity complexity and highly sensitive to threat faced by women will automatically endorse taking action to create a social identity safe milieu for women. Thus, men's PSC working environment may play a role in determining when they engage in identity safety behaviors.

As an extension of the JD-R model (Demerouti, et al., 2001), PSC is likely to moderate men's behavior via both the health impairment pathway and the motivational pathway. The former pathway states that job demands such as work pressure and emotional taxation deplete mental and emotional resources necessary to sustain psychological health. The STEM academic environment can be extremely high pressure and competitive, particularly as newly minted Ph.D.'s seek advancement toward tenure (Castro et al., 2013). If male scholars' emotional and cognitive energy is bankrupt as they struggle to keep up with the demands of their job, they are not likely to have the emotional and cognitive energy needed to ameliorate social identity threat for women colleagues, even if these men are acutely aware of its dangers. PSC should also moderate men's behavior through the motivational pathway of the JD-R model. When psychological health is deemed a priority, organizations provide employees with the resources necessary to manage job demands effectively, boding well for employee engagement and performance. When complex identity-holding men are sensitive to the threats faced by women and behaviors supporting psychological health are encouraged, motivation to engage in identity safety behaviors is maximized. However, when complex identity-holding men do not get the resources they need, the motivation to help women and to provide them with psychologically

enhancing resources will dissipate, even if they are aware of women's social identity threats in the environment.

Hypothesis 4: PSC will moderate the indirect effect of social identity complexity and endorsement of identity safety behaviors through men's sensitivity to women's social identity threat. The positive relationship between men's sensitivity to women's social identity threat and endorsement of identity safety behaviors will be significantly stronger in high PSC work environments relative to low PSC work environments.

Figure 2 is a visual for the proposed model of men's perception of social identity threat toward women in the workplace and endorsement of identity safety behaviors.

CHAPTER III: METHOD

Participants

The current study is concerned with male-dominated academic settings. STEM academe continues to be highly represented by men, starting at the doctoral level. With respect to doctoral degrees earned by men in STEM fields, the statistics are as follows in ascending order: biology/biomedicine, 48%; earth science, 58%; chemistry, 63%; mathematics, 71%; engineering, 77%; physics, 78%; and computer and information science, 79% (National Science Foundation, 2010). Based on this data, it may seem at first blush that some STEM fields are relatively gender balanced namely biology/biomedicine, earth science, and perhaps even chemistry. However, the picture looks quite different when taking a stratified view across career stages. Table 1 is a breakdown of the percentage of male and female academics at levels of assistant, associate, and full professorship in four-year institutions (National Science Foundation, 2006). The proportion of male professors increases at every academic rank, so that at the full professor level, even the fields with the lowest percentage of men - biological, agricultural, and environmental life sciences - are overwhelmingly dominated by men, 80%. Engineering has the highest percentage of full professors who are male, with 95%.

I solicited 2505 male STEM assistant, associate, and full professors. This number was determined based on the anticipated response rate and desired sample size. In their simulation study regarding adequate sample size to detect mediation, Fritz and MacKinnon (2007) found that to detect full mediation with power of .8, the estimated sample size needed was 462. The number of individuals I needed to solicit in order to attain a sample size of 462 was dependent on anticipated response rates. In a meta-analytic review, the mean response rate for web-surveys was approximately 35%, but could be as low as 10% (Cook, Heath, & Thompson, 2000). I incorporated a number of best practices for maximizing online survey response rates (discussed

below) but did not want to be overly confident in my estimate of completed questionnaires, so I used a relatively modest response rate of 20% to determine the number of professors solicited. In order to reach a sample size of 462 with a 20% response rate, I needed to solicit 2310 individuals. Since 462 was the minimum sample size needed and to account for inaccuracies in sampling (e.g. out of date university website information), I decided to solicit more than the minimum and sent out participation invitations to 2505 individuals.

The solicited individuals came from 39 different institutions. The Carnegie Classification of Institutions of Higher Education™ database, which has been a resource for researchers since 1973, was used to identify and select the universities. Using the Carnegie Graduate Instructional Program Classification to identify institutions granting STEM doctoral degrees, there were 211 potential institutions. The 211 schools were randomized in preparation for selecting schools. I intended to randomly select 75 individuals from each institution, identified by going into each university website and extracting all names and email addresses of male assistant, associate and full male professors in STEM departments. Upon beginning the process, I realized that because of different institutional sizes, not all schools had 75 STEM male professors. Nine schools had fewer than 75 men from which to sample, ranging from 17 – 70 candidates. I ended up sampling from 39 institutions in order to get 2505 individuals.

Upon completion of data collection, the final sample consisted of 445 male professors in science (57%), technology (5.1%), engineering (25.3%), and math (12.6%), employed at their current institution for at least one year. The minimum length of employment tenure was necessary to ensure that participants had enough exposure to their institution to acquire perceptions of the psychosocial safety climate (Kossek & Zonia, 1993). The mean number of years employed at their institution was 17.13 years ($SD = 11.10$). The academic rank of the

sample consisted of 62 (14.5%) assistant professors, 116 (27%) associate professors, and 240 (55.9%) full professors. The average age of participants was 52.28 years ($SD = 10.94$). Most participants were U. S. citizens (87.1%) and identified as White/Caucasian (82.9%). As for other racioethnic groups, 10.9% identified as Asian/Pacific Islander, 2.6% identified as Hispanic/Latino, 1.7% identified as Black/African/African-American, .7% identified as Biracial/Multiracial, and 1.2% identified as “other.” With respect to racioethncity, the sample closely mirrored the demographics of STEM professors in the U.S. as described by NSF (2010), where teaching faculty are comprised of approximately 80% White, 13% Asian, and fewer than 5% each for Blacks and Hispanics.

Research Design and Procedure

The study utilized a one-shot cross-sectional field study survey design. Qualtrics online survey software was used to develop and house the survey. Participants were recruited via an email to their institutional account. First a preview email was sent to notify potential participants that they would receive an official study invitation and link in the following few days (Appendix A). Then another email was sent containing the study invitation with a description of the research objective and a link to the study questionnaire (Appendix B). Participant email addresses were obtained from university websites.

Upon accessing the study link, participants read study consent information explaining the research, risks, benefits, confidentiality, time involvement, and use of the study findings (Appendix C). Consent was made by continuing to the next section of the survey. The participant went through a series of web pages containing measures of the predictor and criterion variables. Participants received a modified debrief in which the research objectives were discussed in

greater detail than previously and they were provided with the principle investigator's contact information if they wished to follow up with questions or concerns (Appendix D).

The sequence of measures increased in specificity and sensitivity. Psychosocial safety climate was the most general and nonthreatening of all measures and was therefore the first measure that participants encountered. The next items to be completed were those measuring situation specific endorsement of identity safety behaviors; although this questionnaire is perhaps more personal than asking of men's perceptions of social identity threat for women, it was important that identity safety be assessed before perceptions of identity threat for women so as to reduce priming. Next, participants completed perceptions of threat for STEM women, followed by social identity complexity. Social identity complexity was a potentially sensitive questionnaire because it relates to self-identity, and it is very specific, requiring significant cognitive effort on the part of respondents as they considered the relationships between their various identities. The last items to be completed were the demographic variables.

In line with best practices for the design and administration of web surveys, a number of procedures were taken to maximize response rates. First, a precursor to the invitation email was sent to potential participants (see Appendix A); this type of precontact notification has been associated with higher response rates in web surveys (Cook et. al, 2000). Second, the invitation email (see Appendix B) format was simple and personalized (Cook et. al, 2000); it emphasized the importance of the research, indicated to potential participants that they had been identified through a selective process, and it included a response deadline (Porter & Whitcomb, 2003; Umbach, 2005). Third, invitees were told that a unique identifier (ID) or password was embedded into the Uniform Resource Locator (URL) provided to them. This tactic served to increase confidentiality assurance, decrease nonresponse relative to participants needing to

manually input a password, and minimized researcher concerns associated with individuals taking the survey more than once (Crawford, Couper, & Lamias, 2001). Fourth, a series of reminders were sent, which has been found to have a positive effect on response rates (Cook et. al, 2000). The first reminder was sent two days after the invitation email; a shorter rather than a longer time lapse has been found to be most effective (Crawford, Couper, & Lamias, 2001). An additional reminder was sent two days prior to the close deadline (Umbach, 2005). The reminder email was identical to the invitation email (see Appendix B) with the following introduction added: *This is a gentle reminder to consider participating in my dissertation research on STEM academe. Please continue reading below if you have yet to consider participating.* Fifth, although clear support has not been demonstrated for its effectiveness, the inclusion of a progress indicator has been recommended and was included (Cooper, Traugott, & Lamias, 2001; Crawford, Couper, & Lamias, 2001). Sixth, the survey length did not require more than 15 to 20 minutes of time investment on the part of the participant (Umbach, 2005).

Because the predictor and criterion variables were collected from the same source at the same point in time, ways of reducing the effects of common method variance were considered. Using the recommendations put forth by Podsakoff, MacKenzie, Lee, and Podsakoff (2003), several remedies were used to minimize the risk of the relationship between the independent and dependent variables being inflated or deflated as a result of the use of common methods. First, instructions encouraged participants to answer questions as honestly as possible, providing assurance of no right or wrong answers to the study questions, and ensuring their responses would remain anonymous; such actions help to reduce social desirability, evaluation apprehension and acquiescence effects. Second, in order to mitigate the adverse effects of common scale endpoints and anchoring, variation in response formats was introduced. Third, the

item order within measures of sensitivity to threat, identity safety endorsement, and psychosocial safety climate were randomized so as to combat order effects.

Measures

Social identity complexity. Complexity was measured in two steps. In the first step, participants identified and selected important group memberships. In the second step, participants engaged in a series of questions tapping into different components of complexity, resulting in three distinct measures. The associated measures are reviewed in turn.

Group elicitation questionnaire. The streamlined and computerized approach taken by Miller et al. (2009) to ascertain social identity groups was used. The Group Elicitation Questionnaire (GEQ) uses a series of multiple-choice items to elicit group membership information regarding membership categories predetermined by the researcher based on knowledge of the population being sampled. The membership categories I chose to include were parental status, religious affiliation, family socioeconomic class, relationship status, sexual orientation, gender, nationality, and hobby (Appendix E). These categories were chosen because they represent fairly orthogonal groups in that membership in one is not highly predictive of membership in another (Miller et al., 2009). For instance, being a parent rather than a nonparent does not predict class; class does not highly correlate with hobbies. All but religion, nationality and hobby categories had a checklist of options because the choices were relatively limited. The remaining categories (i.e. religion, nationality, hobby) had numerous options, so an open-ended format was used to ensure individuals were able to accurately specify how they identify. Once participants identified their group memberships, all of their selections were presented on a single webpage in which they were asked to pick the group membership most important to them. Then a second webpage was presented with the remaining groups and they were asked to pick the

second group membership that was important to them. The result of this technique was an individualized set of cross-cutting multiple social identity groups. The most popular combinations of ingroups chosen were parental and relationship status (33%), parental status and religion (10%), parental status and hobbyist (7%), parental status and class (7%), and relationship status and religion (7%).

Prototypical complexity. Prototypical complexity was the primary measure of social identity complexity (Appendix E). Participants viewed a set of instructions asking them to compare their selected group memberships by reflecting on the similarity between the typical members of each pair of identity groups (e.g. ‘The typical Roman Catholic is very similar to the typical parent’). In addition, the identity group, STEM academic, was presented with the participant’s selections in order to serve as a constant across individuals (Brewer & Pierce, 2005). Participants rated each possible pair, for a total of 3, using a 7-point Likert scale with labels 1 (*strongly disagree*) to 7 (*strongly agree*). A prototypical complexity index was created by determining the mean rating of perceived typicality across all pairings, with higher values indicating greater overlap, and therefore less complexity, and low values indicating less overlap, and therefore greater complexity. In preparation for analysis, this measure was reversed scored for easier conceptualization (i.e. higher scores = higher complexity). Initial groundwork for establishing construct validity has been laid through convergence of related variables, including values, anxiety-related mood, ingroup threat, outgroup tolerance, and ingroup bias, all of which were discussed in detail in the literature review (Roccas & Brewer, 2002; Schmid et al., 2009). Reliability scores for prototypical overlap were not reported for previous studies, but Cronbach’s alpha for the current study was .59.

Differentiation and integration complexities. The need for more refined measures of social identity complexity was acknowledged by Roccas and Brewer (2002). To address this issue I created two additional questions (Appendix E), one assessing differentiation and the other integration, which I believed more greatly captured the full range of complexity than the prototypical complexity measure. Upon examination, the prototypical complexity task serves to tap into differentiation rather than integration. It does this by asking individuals to focus on the similarities between ingroups, where perceiving fewer similarities indicates greater complexity. If an individual views typical members of two ingroups as very similar, it is an indication of an inability to acknowledge incompatibilities between those two ingroups. Likewise, if an individual does not view typical members of two ingroups as very similar, it indicates an ability to acknowledge incompatibilities between them; however, the ability to differentiate is only one part of the high social identity complexity equation. The ability to integrate is also important, which the prototypical complexity measure does not address. The prototypical measure is also very broad in that it does not specify the type(s) of similarity to consider. By asking people to think about the typical members of each group, an individual filling out the prototypical measure could choose to consider typicality on a broad range of factors including appearance, communication patterns, behavioral patterns, beliefs, and attitudes.

The first item I developed is another indicator of differentiation ($\alpha = .84$), but it differs from the prototypical measure in two ways. First, it directly asks about differences between one's ingroups rather than framing it around similarities between typical ingroup members. Second, it is specific about the kind of difference to focus on in that it explicitly asked participants to consider the tensions between the beliefs and values of each pair of their selected identity groups. I chose to focus on beliefs and values because Roccas and Brewer (2002) drew from Tetlock's

(1983) conceptualization of cognitive complexity which reflects differentiation and integration of potentially conflicting beliefs and values. This resulted in three items. An example of the actual item read, ‘For me, there are many differences in the beliefs and values between being a STEM academic and being a parent.’ The participant was requested to indicate how true the statement was for him.

I developed a second item that followed up on the differentiation item and was designed to measure integration ($\alpha = .83$). Participants were asked to consider how true it is that they are able to resolve tension in the beliefs and values between each pair of their selected identity groups, resulting in 3 items. An example item read, ‘I can resolve any potential conflicts in beliefs and values between being a STEM academic and being a parent.’ The differentiation and integration items were rated on an 11-point bipolar scale from 0 (*not true at all for me*) to 10 (*definitely true for me*). Higher scores indicated higher complexity on both the differentiation and integration measures. Given the theoretical importance of differentiating and integrating for maximizing social identity complexity (Roccas & Brewer, 2002), I was interested in the combined impact of differentiation and integration and anticipated an interactive effect between these two variables. I predicted stronger positive relationships to male sensitivity to threat and identity safety when an individual was high on both differentiation and integration than when an individual was high on either one alone or low on both.

Male sensitivity to women’s identity threat. The Group-directed Gender Identity Threat scale (Roberson, Fudman, & Pegues, 2011) was used to measure male sensitivity to women’s identity threat (Appendix F). It consisted of 15 items. The scale was designed to measure the extent to which individuals perceive there to be gender related threats for STEM women in their local academic environment (i.e. ‘This survey asks for your opinions about your

current working environment. As you consider each question, think about the people in your present work group or unit.’) I however was interested in men’s awareness of STEM threats for women at a macro level, and the instructions were changed slightly to reflect this interest (i.e. ‘These items ask for your perception about academic STEM fields in general.’) This recently developed scale was designed to be unidimensional while addressing six types of threat. A threat identified as *typecast* is one in which a woman is stereotyped as the traditional, communal female. Coworkers want or need to fit a woman into a traditional female role, such as sex object, caregiver, wife, daughter, mother, and so forth (e.g. ‘STEM women are expected to be accommodating to others’). A *low status* threat is constituted by the assumption that women have lower status than men in the work environment (e.g. ‘People assume that female professionals are junior to the male professionals’). When cues are conveyed that deem women as *not serious*, it means that women are viewed as less committed than their male counterparts (e.g. ‘There is an unspoken assumption that men are more committed to their work than women’). There are also threats where women’s achievements are discounted because they are viewed as getting unearned benefits, status, or credit for merely being a woman, and these are labeled *undeserving* (e.g. ‘Women are perceived to have unearned advantages’). *Lack of fit* refers to threats relating to the belief that women do not belong in a certain industry or in leadership positions (e.g. ‘Men are seen as a better fit than are women’). Finally, *low performer*, refers to threatening cues based on low performance expectations of women in a particular field (e.g. ‘Coworkers believe that women are not high-performers’). Threat is assessed using a Likert-scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*).

Initial tests of the scale have established its substantive validity using the Anderson and Gerbing (1991) comparative item-sort task (Roberson, 2011). Substantive validity of a measure

is “the extent to which that measure is judged to be reflective of, or theoretically linked to, some construct of interest” and “refers to a property of individual items or measures, in contrast with content validity, which refers to a property of a set of items or measures taken together” (Anderson & Gerbing, 1991, p. 732). Results of an item-sort task generate two indices. The first index, proportion of substantive agreement, P_{sa} , refers to the proportion of judges who assigned an item to its intended construct. Greater substantive validity is indicated by P_{sa} values closer to 1.0 within the range of possible values from 0.0 to 1.0. The second index, the substantive-validity coefficient, C_{sv} , determines the extent to which an item may be tapping unintended constructs by the proportion of respondents who assign an item to its intended construct more than to other constructs. The larger the value, within the potential range of -1.0 to 1.0, the better the substantive validity. For the Group-directed scale, items with C_{sv} significant at the .05 level and with P_{sa} 's of greater than .7 were retained, as suggested by Holt, Armenakis, Field, and Harris (2007).

Given the newness of the scale, I conducted an exploratory factor analysis (EFA) using maximum likelihood as the extraction method and direct oblimin rotation to determine the factor structure. The Kaiser-Meyer-Olkin statistic confirmed the sampling adequacy for the analysis, $KMO = .94$, which is well over the acceptable limit of .50 (Field, 2013). The KMO 's for individual items were also well above the acceptable limit, ranging from .86 - .97. In obtaining eigenvalues for each factor in the data, two factors emerged with eigenvalues > 1 , and in combination explained 60.26% of the variance. Eleven of the 15 items loaded onto the first factor and had loadings above .4. Two items loaded onto the second factor with both loadings being above .4. Based on the scree plot inflection, however, a one factor model could also be argued. The second factor seemed to measure the fit of women in science, but there were also

items that loaded onto the first factor that also measured fit, thus there was not a compelling theoretical argument to proceed with two factors. Nonetheless, to ensure that the two factor model did not significantly impact results, correlations between study variables and hypotheses 1 and 2 were tested using the original 15-item scale, an 11-item male sensitivity scale ($\alpha = .93$) representing factor one, and a 2-item male sensitivity scale representing factor 2 ($\alpha = .85$). The analyses did not differ, thus the full original 15-item scale ($\alpha = .93$) was retained and used in all subsequent analyses.

Psychosocial safety climate. The PSC-12 is a 12 item, four-factor scale (Hall, Dollard, & Coward, 2010) and was used to measure psychosocial safety climate among male professors (Appendix G). The items were derived from numerous safety climate measures and adapted to assess PSC (Hall et. al, 2010). The four domains that comprise the PSC-12 are management commitment, management priority of PSC, organizational communication, and organizational participation or involvement. The reliability for all 12 items has been shown to be high ($\alpha = .94$) in previous research (Hall et. al, 2010). The internal consistency for each factor and a sample item from each domain follows (Hall et. al, 2010): ‘In my workplace management acts quickly to correct problems/issues that contribute to employees’ psychological health’ (i.e. management commitment, $\alpha = .88$); ‘Management considers employee psychological health to be equally as important as productivity’ (i.e. management priority, $\alpha = .90$); ‘My contributions to resolving occupational health and safety concerns in the organization are listened to’ (i.e. organizational communication, $\alpha = .77$); ‘Employees are encouraged to become involved in psychological safety and health matters’ (i.e. organizational participation, $\alpha = .80$). Items were modified slightly to better reflect an academic setting. For instance, ‘my administration’ was substituted for ‘management’ on the final questionnaire. Content validity (Dollard & Bakker, 2010),

construct validity (Hall et. al, 2010), predictive validity (Dollard & Bakker, 2010), and conceptual distinctiveness (Idris et. al, 2012) have been established. Cronbach's alpha of the scale for the current study was .95.

Situation specific identity safety endorsement. Prior to this dissertation, no measure existed for assessing situation specific individual level identity safety behaviors. Identity Safety Endorsement (ISE) is defined as the willingness to express attitudes and engage in behaviors that minimize social identity threat in the workplace. To measure situation specific ISE I employed vignettes (Appendix H). The vignette technique involves "crafting a short, descriptive sketch of an incident and then presenting it to informants to elicit their opinions and reactions to its contents." (Schoenberg & Ravdel, 2000, p. 63). Vignettes have a long tradition in a variety of disciplines, and are typically used to tap into "how meanings, beliefs, judgements and actions are situationally positioned" (Barter & Renold, 2000, p. 308). Utilization of vignettes has several benefits that explain why I chose to use this method. Vignettes allow the researcher to specify a set of conditions to ensure responses are made in light of a particular situation (Finch, 1987). For instance, although a range of identity safety behaviors exist, not all of them are suitable for every encounter with threat (Shapiro & Neuberg, 2007). Vignettes enabled me to define a specific threat and pair it with a viable identity safety behavior. Also, social identity threats are contextual in that the experience of threat is precipitated by a bounded incident (Castro et al., 2013; Spencer, Steele, & Quinn, 1999), making vignettes a suitable technique. Given the sensitive nature of identity safety, vignettes were a known way to help distance the participant from responses when exploring difficult topics (Finch, 1987). Also, because of the moral implications associated with identity safety, vignettes were a useful way to minimize evaluation apprehension and social desirability effects, particularly when respondents assume the role of a

fictional character (Hughes & Huby, 2002). Finally, vignettes were easily modified to fit my population of interest, academic scientists (Schoenberg & Ravdel, 2000).

Vignette design. In constructing vignettes, a number of decisions must be made that inform the final product. While some decisions should be made in light of the project's research purpose and objectives (Barter & Renold, 2000), other decisions reflect standard practice in vignette design. Regarding the latter, relevance and realism are important achievements in developing the story (Finch, 1987; Hughes, 1998) and was addressed by drawing from real experiences of women in academia (Niemann, 1999) and women scientists in particular as inspiration (Castro et al., 2013; MIT Report on the Status of Women Faculty in Science and Engineering, 2011). The vignettes used clear, unambiguous, and precise language that was appropriate for the population under study (Barter & Renold, 2000). I now turn to decisions regarding vignette design that were largely a function of my study's design, purpose, and objectives.

The level of detail is a major consideration in vignette design. Too much information can overburden participants (Hughes, 1998) or make interpretation of participant responses difficult (Wason, Polonsky, & Hyman, 2002), while too little context-setting also makes interpretation difficult and increases the likelihood of 'it depends' responses (Finch, 1987) which would have not been able to be explored given this study's single-shot cross-sectional survey design. The detail in each vignette was enough so that the particular identity threat and the context in which it occurred were clear. I attempted to exclude information that could provide an alternative explanation for a response and included information denoting moderators that I wished to control (Wason, Polonsky, & Hyman, 2002). For instance, regarding the latter, given the pervasiveness of the stereotype concerning women's incompetency in math (Steele, Spencer, & Aronson,

2002), I did not want to leave to subjectivity the level of competency participants attributed to the female protagonist when deciding upon endorsing identity safety behaviors. Hence, the intelligence and competency of the woman scientist in the story was clearly established.

The vignettes followed the same female protagonist over time as it enhanced the dramatization of the narrative (Wason, Polonsky, & Hyman, 2002), and promoted the reader's interest (Finch, 1987). It was also economical in that key contextual information to remain constant across vignettes was unnecessary to repeat (Hughes, 1998). At the same time, this staging method increased the amount of contextual information the reader must retain across each vignette. Finch (1987) recommended no more than four story transitions occur to reduce confusion and loss of details. A total of six short vignettes were developed, resulting in five story transitions.

Participants were asked to assume the role of a character in the vignette who was witness to a social identity threatening episode, and then asked to respond to the vignettes as if the scenario were occurring in the context of their department and institution. The decision to have participants respond with their work milieu in mind related to Hypothesis 5 concerning the prediction that the positive relationship between sensitivity to social identity threat for women and endorsement of identity safety behaviors would be moderated by perceptions of one's psychosocial safety climate. Because I was interested in ascertaining if and when men will endorse identity safety behaviors in their own work setting, grounding the vignettes in the context of the respondent's institution was appropriate.

Vignette content. The content of the vignettes can be separated into two components. The first component is time and space, which set up the general context and career stage of Lisa, the female protagonist. Women face threats throughout their career (Castro et al., 2013; MIT Report

on the Status of Women Faculty in Science and Engineering, 2011; Pell, 1996), thus Lisa's story began with her as a job candidate in the first vignette and ended with a post-tenure incident in the final vignette.

The second component of each vignette is the social identity threat, which stems from an incident-related cue and possesses a particular nature. Table 2 breaks down the structure of each vignette with respect to career stage, social identity threat, and associated identity safety behavior. Both cue type and nature of the threat were derived from work with women scientists about their experiences with social identity threat in academia (Castro et al, 2013; MIT Report on the Status of Women Faculty in Science and Engineering, 2011; Niemann, 1999), thereby ensuring relevance regarding the contextual factors and specific threats encountered in academe. For instance, in a self case study, Niemann (1999), a Mexican-American woman, discussed numerous threatening incidents during her faculty career at one institution. One incident, which provided inspiration for the first vignette, described her being encouraged to apply for a tenure-track position that had opened in the department where she was about to end her doctoral studies, but also being told that the dean really wanted the department to hire a Mexican-American or African-American scholar. These social identity related comments interrupt cognitive flow and translate into threats that ascribe women to traditional roles, imply inferior competence and commitment, or highlight their marginalized status.

Vignette response format. The response format was largely determined by the aims of the study. Vignette response formats can take many forms, including open-ended questions (e.g. Hughes, 1998; Schoenberg & Ravdal, 2000), fixed-choice responses (e.g. Finch, 1987; van der Pas, van Tilburg, & Knipscheer, 2005), and Likert scales (e.g. Davis, LaRosa, & Foshee, 1992).

The current study was interested in the endorsement of identity safety behaviors, and the response items were designed to tap into this.

Following each vignette, participants were presented with three actions they could take in response to someone perpetrating social identity threat for a woman colleague and participants were asked how likely they would be to engage in each one. The first behavioral option facilitated identity threat (Item 1 of each vignette, Appendix H). The second behavior endorsed ignoring or avoiding the threat (Item 2 of each vignette, Appendix H), and the final behavioral option exemplified endorsement of an identity safety behavior (Item 3 of each vignette, Appendix H). The identity safety behaviors exemplified in the vignettes included encouraging nonsexist behavior (Markus et al., 2000) enhancing intellectual belonging (Good et al., 2012; Markus et al., 2000), enhancing social belonging (Purdie-Vaughns & Walton, 2011; Walton & Cohen, 2007), having high performance expectations (Markus et al., 2000; Steele et al., 2002) and actively resisting stereotypes³ (Davies et al., 2005; Markus et al., 2000) (see Table 2).

Piloting the vignettes. After development of the six vignettes, they were vetted with a group of individuals with specific knowledge of the topic. One STEM woman faculty member and six researchers, all of whom were involved in a qualitative research project involving STEM women's experiences with social identity threat in academe provided comments and feedback. Based on their feedback, relatively minor adjustments were made to vignette content or response options.

The study questionnaire was initially distributed to a sample of 150 professors from the population of interest. I examined the first 20 completed surveys to see if there was variance in

³ Because all of the vignettes are such that the source of the threat is a colleague and takes the form of a comment, most identity safety behaviors that could be taken by a third party in the situation came in the form of encouraging nonsexist behavior. In three of the four vignettes where this is the case, however, the specific way in which nonsexist behavior is encouraged indicates a second form of identity safety.

participants' likelihood of engaging in each action. A visual scan of the data showed that there was variability in responses, so the survey was distributed to the full participant list without further adjustments.

In preparation for data analysis, a situation specific ISE score was created for each participant using the mean score on item 3 (i.e. the behavior representing identity safety) across the six vignettes ($\alpha = .57$).

General identity safety endorsement. In addition to the situation specific vignettes, I developed 10 items to reflect general identity safety endorsement behaviors (Appendix J). The items were developed based on identity safety strategies identified in the social psychology literature, including having friendships with dominant group members, engaging in mentoring, ensuring fairness, limiting biased behavior in self and others, increasing intellectual and social belonging, and promoting diversity (Davies et al., 2005; Good et al., 2012; Markus et al., 2000; Purdie-Vaughns & Walton, 2011; Steele et al., 2002; Walton & Cohen, 2007). Two items on intervening on behalf of women when devalued or disrespected by others were adapted from the Social Justice Advocacy Scale (van Soest, 1996). Items were rated on a bipolar scale ranging from 0 (*very infrequently*) to 10 (*very frequently*), with higher scores indicating greater endorsement of identity safety.

To determine the scale's factor structure, I conducted an exploratory factor analysis (EFA) using maximum likelihood as the extraction method and direct oblimin rotation. The Kaiser-Meyer-Olkin statistic⁴ confirmed the sampling adequacy for the analysis, KMO = .87, which is well over the acceptable limit of .50 (Field, 2013). The KMO's for individual items were also well above the acceptable limit, ranging from .80 - .93. In obtaining eigenvalues for

⁴ The KMO statistic ranges in value between 0 – 1, can be calculated for multiple and individual items, and represents the ratio of the squared correlation between variables to the squared partial correlation between variables.

each factor in the data, two factors emerged with eigenvalues > 1 , and in combination explained 56.23% of the variance. Eight of the 10 items loaded onto the first factor and suggested that the factor represents supporting women in STEM. Three of the items had loadings less than .4, the recommended minimum, and were dropped from the scale. The remaining two items loaded onto the second factor and suggested that the factor represents standing up for women who are under threat. Because deleting items can alter the factor structure, rerunning the EFA is recommended to verify its stability (Field, 2013). An identical EFA was conducted on the revised 7-item, two factor scale, and results then indicated there to be one factor with an eigenvalue > 1 , explaining 54.58% of the variance. The unrotated factor matrix revealed that all factor loadings were above .4, thus all remaining items were retained, resulting in a one factor scale ($\alpha = .86$).

Additional measures. Some additional criterion variables were developed as part of the situation specific ISE measure. These are available in Appendix H as part of the items following each vignette and are explained below.

Threat endorsement. Threat endorsement was assessed using item 1 on the situation specific identity safety endorsement vignettes. As previously mentioned, in addition to an identity safety behavior being provided, each vignette was accompanied by a behavioral response to the situation that exacerbated the social identity threat posed in the scenario (i.e. item 1). Participants were asked how likely they would be to engage in the proposed behavior. This was assessed on a Likert-scale ranging from 1 (*very unlikely*) to 7 (*very likely*). A threat endorsement score was created for each participant using the mean score on item 1 across the six vignettes ($\alpha = .52$).

Avoidance endorsement. Avoidance endorsement was assessed using item 2 of the situation specific identity safety endorsement vignettes. In addition to an identity safety behavior

and a threat behavior being provided, each vignette was accompanied by a behavioral response to the situation that avoided the social identity threat posed in the scenario (i.e. item 2).

Participants were asked how likely they would be to engage in the proposed behavior. This was assessed on a Likert-scale ranging from 1 (*very unlikely*) to 7 (*very likely*). An avoidance endorsement score was created for each participant using the mean score on item 2 across the six vignettes ($\alpha = .61$).

Affect toward victim. A measure of affect toward the victim of threat in each scenario was taken following each vignette (item 4 of each vignette). Respondents were asked how they would feel toward the victim in that situation. This was assessed on a bipolar scale ranging from 1 (*negatively*) to 7 (*positively*). An affect toward victim score was created for each participant using the mean score on item 4 across the six vignettes ($\alpha = .86$).

Affect toward perpetrator. A measure of affect toward the perpetrator of threat in each scenario was taken following each vignette (item 5 of each vignette). Respondents were asked how they would feel toward the perpetrator in that situation. This was assessed on a bipolar scale ranging from 1 (*negatively*) to 7 (*positively*). An affect toward perpetrator score was created for each participant using the mean score on item 5 across the six vignettes ($\alpha = .77$).

Control and demographic variables. Various demographic factors were collected as possible covariates to be controlled. These included current institution, organizational tenure, STEM specialization, academic rank, percentage of men and percentage of women faculty in the department, extent of interaction with female colleagues, age, citizenship status and race/ethnicity (Appendix J).

CHAPTER IV: RESULTS

Preliminary Data Analysis

The means, standard deviations and correlations for each of the study variables are displayed in Table 3. There were several correlations of note. For measures of the predictor variable, social identity complexity, it was expected that prototypical complexity⁵ would be positively correlated with the differentiation⁶ measure, since both were proposed measures of one's capacity to make distinctions between self-identified group memberships; this relationship was found ($r = .13, p < .01$). Differentiation and integration⁷ were negatively correlated ($r = -.34, p < .01$) indicating that integration became less likely to occur as one made differentiations between ingroup memberships. As mentioned previously, although I was interested in the main effects of each measure, of greater interest in all analyses became the interaction between these two variables because the highest level of complexity is reached when one can both differentiate and integrate. I conducted analyses under the hypothesis that differentiation and integration in increasing levels would be a significant predictor of male sensitivity to threat and identity safety endorsement, over and above high levels of either differentiation or integration alone.

With respect to the criterion variables, the two measures of identity safety – the vignettes which tapped into situation specific ISE, and the scale which tapped into general ISE – should have been significantly and positively correlated, and the bivariate correlation confirmed this relationship ($r = .47, p < .01$). In turn, both identity safety endorsement measures should have been negatively correlated with threat endorsement and avoidance endorsement as measured by the vignettes. For threat endorsement, both correlations were in the right direction, but only the

⁵ Example item measuring prototypical complexity: The typical STEM academic is very similar to the typical parent?

⁶ Example item measuring differentiation: For me, there are many differences in beliefs and values between being a STEM academic and being a parent.

⁷ Example item measuring integration: I can resolve any potential conflicts in beliefs and values between being a STEM academic and being a parent.

relationship with general ISE was significant ($r = -.11, p < .05$), while the relationship with situation specific ISE was not significant ($r = -.09, ns$). For avoidance endorsement, correlations were in the right direction, with both general ISE ($r = -.25, p < .01$) and situation specific ISE ($r = -.42, p < .01$) reaching significance. Also, threat endorsement and avoidance endorsement were significantly and positively correlated ($r = .32, p < .01$).

As for the relationship between social identity complexity and the outcome variables, prototypical complexity was not significantly correlated with any of the dependent measures. Differentiation had a significant positive relationship to the endorsements of threat ($r = .15, p < .01$) and avoidance ($r = .10, p < .05$), and affect toward the perpetrator ($r = .11, p < .05$). These relationships were in the opposite direction than expected indicating that as one made more distinctions between self-identified ingroup memberships, the more likely he was to like the perpetrator and endorse threat and avoidance behaviors. Integration had several significant relationships to study outcomes in the expected direction, including general ISE ($r = .13, p < .01$), threat endorsement ($r = -.12, p < .05$), avoidance endorsement ($r = -.13, p < .01$), and affect toward the victim ($r = .11, p < .05$), indicating the more an individual could resolve conflicts between self-identified ingroups, the more he was likely to promote identity safety for STEM women in general and have positive feelings toward the victim of a situation specific threat; he was less likely to endorse behaviors that exacerbated threat or avoided a situation in which a female colleague was under social identity threat.

Male sensitivity to women's identity threat, the mediator of interest, lacked significant correlation to all social identity complexity measures, and with respect to the outcome variables was significantly correlated with situation specific ISE ($r = .10, p < .05$) and affect toward the victim ($r = .13, p < .01$), both of which were in the expected direction, suggesting that the more a

man was sensitive to social identity threats faced by women, the more likely he was to promote identity safety and have positive feelings toward the victim in a situation specific threat. As for male sensitivity to threat's relationship to the moderator, psychosocial safety climate, it was significant but in the opposite direction than expected ($r = -.12, p < .05$), so that as a climate was deemed more psychologically and socially safe, men were less likely to be aware of social identity threat for women.

Finally, in determining the control variables for analysis, several relationships emerged. Race, dummy coded as 1 = white and 0 = men of color, had several significant relationships with study variables. It was correlated with differentiation ($r = -.18, p < .01$), threat endorsement ($r = -.23, p < .01$), avoidance endorsement ($r = -.19, p < .01$), affect toward the victim ($r = .14, p < .01$), and affect toward the perpetrator ($r = -.19, p < .01$), such that whites were less likely to see differences between their self-identified ingroup memberships, less likely to endorse threat or avoidance, and less likely to have positive feelings toward the perpetrator of threat than men of color. Also, whites were more likely to have positive feelings toward the victim than men of color. The extent of meaningful contact with women colleagues was negatively correlated with male sensitivity to threat ($r = -.12, p < .01$), threat endorsement ($r = -.14, p < .01$), avoidance endorsement ($r = -.14, p < .01$), and affect toward the perpetrator ($r = -.13, p < .01$), meaning that the more significant contact men had with women, the less likely they were to be aware of STEM threats, endorse threat, endorse avoidance, and less likely to have positive feelings toward the perpetrator of threat. Also, the extent of meaningful contact with women colleagues was positively correlated with general ISE ($r = .13, p < .01$) such that greater contact was associated with greater promotion of identity safety in general. To a lesser degree, there were significant correlations of the percentage of women in the department, academic tenure, citizenship status,

and parental status with some of the study variables and these were included as controls where relevant.

Hypothesis Testing

Hypotheses 1-3 were tested using ordinary least squares regression procedures in SPSS. Hypotheses 4 and 5, involving mediation and moderated mediation tests, were conducted utilizing the bootstrapping approach. Bootstrapping is a computer-assisted approach where the coefficients of the (conditional) indirect effect are estimated numerous times from the original sample. This is done by creating multiple random samples of size N from the original sample (N units with replacement); the rationale being that the original sample can be likened to the broader population of interest. The data is suggested to be resampled a minimum of 1000 times (Preacher, Rucker, & Hayes, 2007). Once resampling is complete, the estimated (conditional) indirect effect coefficients are sequentially ordered, resulting in a sampling distribution of the (conditional) indirect effect. From there, confidence intervals (CIs) are generated. If 0 is not contained in the CI, then the null hypothesis that there is no (conditional) indirect effect can be rejected.

While the Baron and Kenny (1986) approach is the standard and most popular procedure for testing mediation (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002; Preacher & Hayes, 2004) and moderated mediation (Edwards & Lamberts, 2008; Preacher et al., 2007)), there is growing sentiment about the bootstrapping technique as a more robust alternative (Fritz & MacKinnon, 2007; Hayes, 2009; MacKinnon et al., 2002; Preacher & Hayes, 2002; Preacher et al., 2007; Shrout & Bolger, 2002). The Baron and Kenny (1986) method, a causal-steps test, has low power relative to other mediation tests (Fritz & MacKinnon, 2007). In a simulation study, Fritz and MacKinnon (2007) found that in order to detect full mediation using the Baron and

Kenny (1986) method with power of .8, the estimated sample size needed was nearly 21,000. To detect partial mediation, however, the sample size reduced substantially to 562. Still, bootstrapping was found to be the most powerful method of those tested. Another advantage of bootstrapping is that while the Baron and Kenny (1986) approach establishes the causal relationships necessary for mediation, it does not actually test the size of the indirect effect (MacKinnon et al., 2002), ab , where a is the path from the independent variable to the mediator and b is the path from the mediator to the dependent variable. With bootstrapping, however, ab can be formally tested for significance. The Sobel (1982) test also tests ab , however, it assumes that ab is normally distributed when it is typically not normal, even if a and b as individual variables are normally distributed (Edwards & Lambert, 2007). Bootstrapping requires no assumptions to be made about the shape of the sampling distribution of the indirect effect. Finally, as stated by Hayes (2009, p. 411):

It is possible for an indirect effect to be detectably different from zero even though one of its constituent paths is not. Hypothesis tests are fallible. Each carries with it a possibility of a decision error. The more nulls that must be rejected in order to claim an indirect effect, the more likely the analyst will go away empty handed.

All analyses were conducted in SPSS, however, to facilitate analyses involving moderation, mediation, and their combination, the computational tool and add-on, PROCESS (Hayes, 2012), available for SPSS was used. PROCESS estimates the coefficients for various models using OLS regression and estimates indirect and conditional indirect effects using bootstrapping methods. If indirect effects are found, PROCESS computes several effect size estimates. PROCESS has been recommended for testing moderation as it automatically centers continuous predictors, computes the interaction term, and executes simple slopes analyses to

uncover the nature of a moderated relationship. It also provides heteroscedasticity-consistent standard errors to prevent the assumption of homoscedasticity (i.e. residuals have similar variances at each level of the predictor) from being violated (Field, 2013). The latter proved helpful in analyses where there was evidence of a violation of homoscedasticity (i.e. differentiation and integration as predictors of affect) as based on the z_{pred} vs. z_{resid} plot (i.e. scatterplot showing the values of the residuals by the values of the outcome predicted by the model).

Hypothesis 1. Hypothesis 1 claimed that social identity complexity will predict men's sensitivity to the identity threats faced by women such that there will be a positive relationship. I first conducted a hierarchical regression analysis with prototypical complexity as the predictor of interest since it was the measure of social identity complexity used in previous research. If prototypical complexity significantly predicted male sensitivity, then differentiation, integration and their interaction would be included in the model to assess whether they predicted over and above prototypical complexity. Otherwise, differentiation, integration, and their interaction would be tested in a separate analysis. The control variables for the analysis involving prototypical complexity were contact with women and percent of women in the department. Both were significant predictors of male sensitivity to threat ($B = -.15, p < .05$; $B = -.01, p < .05$, respectively), such that increased women in the department and meaningful contact with women meant that STEM men were less likely to acknowledge systemic gender identity threats for STEM women. The regression analyses showed that prototypical complexity was not a significant predictor of male sensitivity to threat ($B = -.03, ns$). Thus, hypothesis 1 was not supported when prototypical complexity was used as the predictor (Table 4). Since it was not significant, differentiation and integration were tested as predictors in a separate analysis.

The control variables for the analysis involving differentiation and integration were contact with women, percent of women in the department, and race. Only the percent of women in the department significantly predicted male sensitivity to threat ($B = -.01, p < .05$) such that more women in the department was associated with men being less likely to acknowledge systemic gender identity threats for STEM women. The analysis showed no main effect of differentiation ($B = .03, ns$) or integration ($B = .02, ns$) on male sensitivity to threat. In addition, the interaction term was not significant ($B = .01, ns$), thus hypothesis 1 was not supported utilizing these measures of social identity complexity (Table 5).

Taken together, there was no support for hypothesis 1. Results suggested that representing one's social identities in a complex manner is not related to men's increased level of awareness regarding social identity threat for women in STEM. Also, rather than raising their level of consciousness, it seems that having a greater presence of women in the workplace suppressed STEM men's awareness of the systemic identity threats that exist for women in STEM.

Hypothesis 2. Hypothesis 2 claimed that male sensitivity to women's social identity threat will positively predict endorsement of identity safety behaviors. With situation specific ISE as the outcome variable, the control variables included contact with women, percent of women in the department, and academic tenure status. Only academic tenure status significantly predicted situation specific ISE ($B = .28, p < .05$) such that STEM men with tenure were more likely to promote identity safety in proposed situations involving threatened STEM women. The regression analysis revealed that male sensitivity to threat was a significant predictor of situation specific ISE ($B = .09, p < .05$); STEM men who acknowledged that identity threats exist for STEM women were more likely to promote identity safety in situations involving threatened

STEM women. Thus, hypothesis 2 was supported using this measure. See Table 6 for these results.

With general ISE as the outcome variable for testing hypothesis 2, the control variables included contact with women and the percent of women in the department. Of these, contact with women significantly predicted general ISE ($B = .31, p < .05$), indicating that the more meaningful interactions STEM men had with STEM women, the more likely they were to express promotion of identity safety behaviors on behalf of STEM women in general. The regression analysis revealed that male sensitivity to threat was not a significant predictor of identity safety endorsement as assessed using the general ISE scale ($B = .04, ns$). Thus, hypothesis 2 was not supported using this measure. See Table 6 for these results.

Hypothesis 2 was partially supported. When it came to the influence of being aware of threat for women on whether a man was likely to engage in identity safety behaviors on behalf of STEM women, it appeared to make a difference in situation specific circumstances in which a woman colleague was under threat. Also, men with tenure were more likely to advocate for women in these situations. There was no relationship between the extent to which a STEM man acknowledged social identity threat for STEM women and the extent to which he promoted identity safety for women colleagues in general, but having significant interaction with woman colleagues did suggest greater support for women in the form of identity safety behaviors.

Hypothesis 3. Hypothesis 3 made the claim that social identity complexity will predict endorsement of identity safety behaviors and that the relationship will be positive. Similar to the test of hypothesis 1, I first conducted a hierarchical regression analysis with prototypical complexity as the predictor of interest. If prototypical complexity significantly predicted identity safety endorsement, then differentiation, integration and their interaction would be included in

the model to assess whether they predicted over and above prototypical complexity. Otherwise, differentiation, integration, and their interaction would be tested in a separate analysis. The control variable for the analysis with situation specific ISE as the outcome variable was academic tenure status, and this relationship was significant ($B = .30, p < .01$); STEM men with tenure were more likely than man without tenure to promote identity safety behaviors in reaction to situations involving threatened STEM women. Prototypical complexity was a marginally significant predictor of situation specific ISE ($B = -.07, p = .09$). The direction, however, was opposite to what was hypothesized. That is, STEM men who perceived less similarity between typical members of their social identities (i.e. more complexity) were less likely to engage in identity safety promoting behaviors in situations where a woman colleague was under threat (Table 7).

The control variable for the analysis with general ISE as the outcome variable was contact with women, and this relationship was significant ($B = .30, p < .01$); the more that STEM men had meaningful interactions with STEM women, the more likely they were to generally promote identity safety behaviors on behalf of women in STEM. Prototypical complexity was not a significant predictor of general ISE ($B = -.05, ns$). Table 7 also contains these results. Since neither analysis was significant at the standard .05 level, differentiation and integration were examined as predictors in a separate analysis (Table 8). The control variables for the analysis with situation specific ISE as the outcome variable were academic tenure status and race. Only tenure significantly predicted situation specific ISE ($B = .32, p < .01$); STEM men with tenure were more likely than men without tenure to promote identity safety behaviors in reaction to situations involving threatened STEM women. Results revealed that there was no main effect of differentiation on situation specific ISE ($B = .00, ns$). There was, however, a

marginally significant main effect of integration on situation specific ISE ($B = .04, p = .07$). The relationship was in the hypothesized direction such that the more a STEM man could resolve conflicts between the beliefs and values of his various ingroup memberships, the more likely he was to engage in identity safety promoting behaviors on behalf of a woman colleague in an identity threatening situation.

The control variables for the analysis with general ISE as the outcome variable were contact with women and race. Only contact with women significantly predicted general ISE ($B = .36, p < .01$); the more that STEM men had meaningful interactions with STEM women, the more likely they were to generally promote identity safety behaviors on behalf of women in STEM. Results revealed no main effect of differentiation on general ISE ($B = .03, ns$). There was, however, a significant main effect of integration on general ISE ($B = .14, p < .01$), and the relationship was in the hypothesized direction such that the more a STEM man could resolve conflicts between the beliefs and values of his various ingroup memberships, the more likely he was to engage in identity safety promoting behaviors on behalf of women in STEM generally. No significant interaction was found between differentiation and integration on situation specific endorsement ($B = .00, ns$) or general identity safety endorsement ($B = .01, ns$). Table 8 also contains these results.

Hypothesis 3 was partially supported. There was a trend for higher prototypical complexity, a measure tapping into differentiation, to be associated with less likelihood of engaging in identity safety behaviors on behalf of STEM women, which is counter to theory and what I hypothesized. At the same time, the explicit measure of differentiation that I developed was not related to greater likelihood of promoting identity safety behaviors on STEM women's behalf. Integration complexity had the hypothesized relationship to identity safety behaviors, and

the relationship was not dependent on the level of differentiation. Thus, regardless of the extent to which a STEM man perceived differences between his ingroups, it was the extent to which he could resolve conflicts between his ingroups that predicted greater likelihood of promoting identity safety for STEM women in specific situations and in general. Finally and similar to hypothesis 1, men with tenure were more likely than those without tenure to advocate for a woman in an identity threatening situation, while men who had significant interactions with woman colleagues were likely to show greater support in general for women in the form of identity safety behaviors than men with less meaningful interactions with STEM women.

Hypothesis 4. Hypothesis 4 made the claim that social identity complexity will predict endorsement of identity safety behaviors via men's sensitivity toward women's identity threat. In my original proposal, I had planned to test mediation using two methods, the method popularized by Baron and Kenny (1986) and bootstrapping. Regarding the former, in order to test for mediation the relationships proposed in hypotheses 1 and 2 needed to be significant. Since the relationships did not hold, I did not test for mediation using the Baron and Kenny (1986) method. Unlike the Baron and Kenny (1986) approach which tests mediation using sequential steps that align with a conceptual causal path model, the requirements for testing mediation with bootstrapping differ since it tests explicitly for the indirect effect of a proposed mediator, and does not insist on establishing significance of all paths linking the predictor, mediator, and dependent variable in order to test an overall model (Hayes, 2009; Shrout & Bolger, 2007).

First I tested a set of 4 models with the situation specific ISE measure as the outcome variable. The first 3 models tested for the indirect effect of male sensitivity to threat using each measure of social identity complexity as the predictor. Results indicated no indirect effect when

prototypical ($B = -.002, ns$), differentiation ($B = .003, ns$), or integration ($B = .001, ns$) was used as the predictor. The fourth model was a mediated moderation model with the interaction of differentiation and integration as the predictor, and this model was also not significant ($B = .001, ns$). Table 9 shows results of these analyses.

Next I tested a set of models with the general ISE measure as the outcome variable. The first 3 models tested for the indirect effect of male sensitivity to threat using each measure of social identity complexity as the predictor. Similar to the results for situation specific ISE, there was no significant indirect effect when prototypical ($B = -.002, ns$), differentiation ($B = .003, ns$), or integration ($B = .001, ns$) was used as the predictor of general ISE. The fourth model was a mediated moderation model with the interaction of differentiation and integration as the predictor, and this model was also not significant ($B = .001, ns$). Table 9 shows results of these analyses.

Hypothesis 4 was not supported. Although there was evidence from previous analyses of direct relationships between representing one's ingroups with greater complexity (i.e. integration) and engaging in identity safety behaviors and awareness of social identity threat for women and engaging in identity safety behaviors, results of the bootstrapping analyses indicated that awareness of threat did not play a mediating role in the overall relationship between social identity complexity and identity safety endorsement. Having a complex representation of one's important ingroup memberships did not relate to one's awareness of social identity threat for STEM women, which did not in turn predict greater promotion of identity safety behaviors on behalf of STEM women.

Hypothesis 5. Hypothesis 5 made the claim that psychosocial safety climate (PSC) will moderate the indirect effect of social identity complexity and endorsement of identity safety

behaviors through men's sensitivity to women's social identity threat. The positive relationship between men's sensitivity to women's social identity threat and endorsement of identity safety behaviors will be significantly stronger in high PSC work environments relative to low PSC work environments. As a precursor to testing the overall model, I first tested the interaction between male sensitivity to threat and PSC as a predictor of identity safety endorsement. The control variables for analysis with situation specific ISE as the outcome of interest included contact with women, academic tenure and parental status. Only academic tenure significantly predicted situation specific ISE ($B = .31, p < .01$); STEM men with tenure were more likely than men without tenure to promote identity safety behaviors in reaction to situations involving a threatened STEM woman. Results showed that the interaction between male sensitivity to threat and PSC was not a significant predictor of situation specific ISE ($B = -.01, ns$). See Table 10 for results.

The control variables for the analysis with general ISE as the outcome of interest included contact with women and parental status. Only contact with women significantly predicted general ISE ($B = .33, p < .01$); the more that STEM men had meaningful interactions with STEM women, the more likely they were to generally promote identity safety behaviors on behalf of women in STEM. Results showed that the interaction between male sensitivity to threat and PSC was not a significant predictor of general ISE ($B = -.02, ns$). See Table 10 for results.

Next I tested the overall moderated mediation model using bootstrapping. The way in which I tested it was identical to how hypothesis 4 was analyzed, only with PSC added as a moderator between male sensitivity to threat and identity safety endorsement. Table 11 shows the results for predictors of prototypical, differentiation, and integration as predictors. None of the

indirect effects of male sensitivity to threat were significant as calculated at low, moderate, and high levels of PSC.

Table 12 shows the results for the most complex model tested in which the predictor was the interaction between differentiation and integration. None of the indirect effects of male sensitivity to threat were significant as calculated at low, moderate, and high levels of integration and PSC.

Hypothesis 5 was not supported. PSC did not play a significant role in determining the conditions under which men would likely engage in identity safety behaviors for women. For men who were aware of systemic threats for STEM women and promoted identity safety, working in an environment that valued social and psychological health did not strengthen this relationship.

Summary of Hypothesis Testing

Hypothesis 1 was not supported in that no relationship was found between social identity complexity and male sensitivity to threat; that is, cognitively representing one's important ingroups in a sophisticated manner did not increase the likelihood of a STEM man acknowledging the social identity threats that exist for STEM women. Within this analysis it was found that more women in the department and having meaningful relationships with them made it harder for men to see systemic threat. There was some support for hypothesis 2. Men who are aware of the threat faced by STEM women were more likely to engage in advocacy behaviors on behalf of a woman colleague in a social identity threatening situation, and these men were more likely to be tenured than untenured. However, being aware of threat had no relationship to general identity safety endorsement. Results were mixed with respect to hypothesis 3. Marginally, prototypical complexity could limit one's willingness to engage in identity safety

behaviors in specific situations, which was opposite to what I hypothesized. However, in line with hypothesis 3, being able to resolve perceived conflicts in beliefs and values between one's ingroups (i.e. integration) had positive implications for supporting women in the form of general identity safety endorsement, and marginally for situation specific identity safety behaviors. Also, having more meaningful interactions with women increased the likelihood that STEM men promoted identity safety behaviors for women in STEM in general. Hypothesis 4 was not supported in that being sensitive to social identity threats for women did not play a mediating role in the relationship between social identity complexity and identity safety endorsement. In addition, psychosocial safety climate did not moderate when men are likely to endorse identity safety behaviors for women, thus hypothesis 5 was not supported.

Supplemental Data Analysis

The analyses conducted for hypotheses 2 and 3 were rerun using situation specific threat endorsement and situation specific avoidance endorsement, affect toward the victim and affect toward the perpetrator as the outcome variables in place of situation specific and general identity safety endorsement. Relationships were expected to be in the opposite direction proposed in hypotheses 2 and 3.

Hypothesis 2: Male sensitivity to threat as predictor. In analyses mimicking hypothesis 2, Table 13 shows male sensitivity to women's identity threat examined as a predictor of threat endorsement, avoidance endorsement, affect toward the victim, and affect toward the perpetrator. The results for each dependent variable are discussed in turn.

Threat endorsement. The control variables for threat endorsement included percent of women in the department, contact with women, and race. Contact with women ($B = -.11, p < .05$) and race ($B = -.41, p < .01$) were significant predictors. For the former, the more that STEM men

had meaningful interactions with STEM women, the less likely they were to behave in ways that exacerbated threat for a woman colleague in a social identity threatening situation. For the latter, being a white STEM man reduced the likelihood of exacerbating threat. In this analysis, male sensitivity to threat did not significantly predict threat endorsement ($B = .03, ns$). See Table 13.

Avoidance endorsement. The control variables for avoidance endorsement included percent of women in the department, contact with women, race, academic tenure and citizenship status. Race ($B = -.39, p < .01$), academic tenure ($B = -.28, p < .05$), and citizenship status ($B = -.34, p < .05$) were significant predictors. For race, white STEM men were significantly less likely to avoid a threatening situation faced by a woman colleague than men of color. For academic tenure, tenured STEM men were significantly less likely to avoid a threatening situation faced by a woman colleague than untenured men. For citizenship status, U.S. citizens were significantly less likely to avoid a threatening situation faced by a woman colleague than non U.S. citizens. In this analysis, male sensitivity to threat did not significantly predict avoidance endorsement ($B = -.06, ns$). See Table 13.

Affect toward victim. In looking at male sensitivity to threat as a predictor of affect toward the victim, there were four control variables, including the percentage of women in the department, contact with women, race, and citizenship status. Race ($B = .34, p = .05$) and citizenship status ($B = .31, p = .05$) were significant predictors; white and U.S. citizen STEM men were more likely than men of color and non U.S. citizens to have positive feelings toward a woman colleague in an identity threatening situation. Also, male sensitivity to threat was shown to significantly predict affect toward the victim ($B = .14, p < .01$) such that greater awareness of systemic social identity threat for STEM women predicted positive feelings for a woman colleague in a threatening situation (Table 13).

Affect toward perpetrator. Affect toward the perpetrator had the same control variables as affect toward the victim. In the analysis with affect toward the perpetrator of threat as the outcome variable, contact with women ($B = -.12, p < .05$), race ($B = -.33, p < .01$), and citizenship status ($B = -.32, p < .01$) were significant predictors; men with less meaningful interactions with women, STEM men of color, and non U.S. citizens were more likely than their counterparts to have positive feelings toward the perpetrator. Also, male sensitivity to threat as a predictor of affect toward the perpetrator was significant ($B = -.07, p = .05$) such that greater awareness of systemic social identity threat for STEM women predicted negative feelings for a colleague who perpetrated a social identity threatening situation for a woman colleague (Table 13).

Hypothesis 3: Social identity complexity as predictor. In analyses mimicking hypothesis 3, Tables 14 and 15 show results of the various social identity complexity measures as predictors of threat endorsement, avoidance endorsement, affect toward the victim, and affect toward the perpetrator. Prototypical complexity did not predict any outcomes (Table 14), thus only the results from the analyses with differentiation and integration are discussed.

Threat endorsement. As with previous threat endorsement analyses, control variables included contact with women and race, and both were significant predictors ($B = -.11, p < .05$; $B = -.39, p < .01$, respectively). White STEM men with more meaningful interaction with STEM women were less likely to exacerbate threat for a woman colleague facing an identity threatening situation than STEM men of color with less meaningful interaction with women. While there was no main effect of differentiation or integration, there was a significant interaction between them on threat endorsement. Simple slopes analyses revealed that when integration was low, there was a significant positive relationship between differentiation and threat ($B = .061, p <$

.05). Figure 3 is a graph of the interaction. STEM men who perceive greater conflict in the values and beliefs between important ingroups, are more likely to promote behaviors that exacerbate threat for a woman colleague facing an identity threatening situation, but only when he is not able to reconcile the conflicts he perceives between various ingroups (i.e. low integration). No significant relationship was found between differentiation and threat at mean ($B = .025, ns$) or high levels of integration ($B = -.011, ns$). See Table 15.

Avoidance endorsement. As with previous avoidance endorsement analyses, control variables included contact with women, race, academic tenure and citizenship status. Race ($B = -.36, p < .05$), academic tenure ($B = -.32, p < .05$), and citizenship status ($B = -.34, p < .05$) were significant predictors, indicating that white, tenured, U.S. citizen STEM men, were significantly less likely to avoid a threatening situation faced by a woman colleague as compared to their nonwhite, untenured, international status counterparts. There was no significant main or interactive effect of differentiation and integration on avoidance endorsement. See Table 15.

Affect toward victim. The analysis examining differentiation and integration as predictors of affect toward the victim contained race and citizenship status as possible covariates, and both were significant ($B = .35, p < .05$; $B = .33, p < .05$, respectively). Similar to previous analysis regarding feelings toward a STEM woman facing threat, white men and U.S. citizens were more likely to have positive feelings toward the victim than men of color and STEM men with international status. There was a main effect of integration ($B = .05, p < .05$) on affect toward the victim such that the more a STEM man could resolve conflicts between his important ingroups, the more positive feelings he held toward a woman colleague who was a victim of social identity threat. There was also an interactive effect of differentiation and integration ($B = .03, p < .01$) on affect toward the victim (Table 15). Simple slopes analyses revealed at low levels of integration,

there was a significant relationship between differentiation and affect toward the victim ($B = -.07, p < .05$), and at high levels of integration, the relationship between differentiation and affect toward the victim was marginally significant ($B = .05, p = .07$). Figure 4 is a graph of the interaction. It shows that among STEM men who perceived greater differences in beliefs and values between important ingroups, the less likely he was to have positive feelings toward a woman colleague facing an identity threatening situation, but only if he was unable to resolve the beliefs and values conflict he perceived between his ingroups. Also, albeit a marginal finding, STEM men who both perceived differences between important ingroups and were able to resolve these differences, had the most positive affect toward a woman colleague in an identity threatening situation. No significant relationship between differentiation and affect toward the victim was found at the mean level of integration ($B = -.01, ns$).

Affect toward the perpetrator. The analysis examining differentiation and integration as predictors of affect toward the perpetrator contained contact with women, race and citizenship status as control variables. Race ($B = -.29, p < .05$) and citizenship status ($B = -.36, p < .05$) were significant, such that men of color and non U.S. citizens were more likely to have positive feelings toward the perpetrator of threat than white men and U.S. citizens. There were no main or interactive effects of differentiation and integration on affect toward the perpetrator (Table 15).

PSC as a moderator of social identity complexity and study outcomes. Since male sensitivity to women's identity threat did not have the expected relationship with PSC and did not act as a mediator of social identity complexity and ISE, I was interested to know if PSC moderated any relationship between the various complexity measures and study outcomes, namely situation specific ISE, general ISE, threat endorsement, and avoidance endorsement. I first conducted an analysis looking at the interaction between prototypical complexity and PSC

on each outcome. None of the interactions were significant. In addition, there was no main effect of PSC in any of the analyses.

Next I looked at the three-way interaction between differentiation, integration, and PSC on each study outcome. There was no significant interaction found on situation specific or general ISE or threat endorsement. There was, however, a significant three-way interaction between differentiation, integration and PSC on avoidance endorsement. For this analysis, the control variables were percent of women in the department, contact with women, race, parental status, academic tenure status, and citizenship status. Contact with women ($B = -.15, p < .05$), race ($B = -.37, p < .05$), tenure ($B = -.29, p < .05$), and citizenship ($B = -.35, p < .05$) were significant predictors of avoidance endorsement, where less meaningful contact with women, being a man of color, not being tenured, and not being a U.S. citizen all increased the likelihood of avoiding a situation in which a woman colleague faced social identity threat. As for the interaction between differentiation, integration, and PSC, the simple slopes analysis revealed there to be no interactive effect of differentiation and integration on avoidance in low PSC ($B = -.01, ns$) or moderate PSC ($B = .01, ns$) environments. In high PSC environments, however, there was a significant interactive effect of differentiation and integration on avoidance ($B = .03, p < .05$). Figure 5 graphs this significant interaction in high PSC environments. It shows that for STEM men in socially and psychologically safe climates, those that were most likely to endorse avoidance behaviors were those who perceived fewer conflicts between their ingroups, but only when they also could not resolve whatever conflicts they did perceive to exist between their important group memberships. Those men who perceived fewer conflicts or distinctions between ingroups, but could not resolve those distinctions, were more likely to engage in avoidance when in the presence of a woman facing a social identity threatening situation.

Summary of Supplemental Data Analysis

I examined several of my hypotheses utilizing threat endorsement, avoidance endorsement, and affect as the outcome variables in lieu of identity safety endorsement. For threat and avoidance, findings were consistently not significant, except for the interactive effect found between differentiation and integration on threat endorsement. Men who perceived differences between their various ingroups were more likely to exacerbate threat, but only if they were unable to resolve the differences they perceived. There was a similar interactive effect of differentiation and integration when affect toward the victim was the outcome of interest. Men who perceived differences between their various ingroups were less likely to have positive feelings toward a woman colleague facing an identity threatening situation, but only if they were unable to resolve the differences they perceived. In the only analysis where psychosocial safety climate played a moderating role, there was an interactive effect of differentiation and integration on avoidance endorsement. In climates perceived to be psychologically and socially safe, men who perceived few differences between their various ingroups were more likely to endorse avoidance behaviors, but only when they could not resolve whatever conflicts they did perceive to exist between their important group memberships. Other factors that seemed to played a consistent role in predicting the various outcomes included contact with women, race, and citizenship status, where STEM men with more meaningful interactions with women, who were white and U.S. citizens had positive implications for women facing identity threatening situations.

CHAPTER V: DISCUSSION

What are the characteristics of men who are likely to be aware that social identity threat exists for women? How are these men likely to behave toward women in ways that minimize threat? What role might the work environment play in determining when men minimize threat for women? These were the questions I sought to answer in the current research by proposing and testing a moderated mediation model of men's supportive behaviors for women in STEM academe, one of many male-dominated work settings. Specifically, I examined the impact of the cognitive representation of one's ingroup memberships on sensitivity to and awareness of systemic social identity threat for STEM women, arguing that a man with a more complex identity would increase the likelihood of his awareness of threat. I also reasoned that both a complex social identity structure and sensitivity to women's threats would enhance a man's willingness to engage in identity safety inducing behaviors that reduced social identity threat for STEM women generally and in specific situations. Furthermore, I examined if sensitivity to the existence of systemic threat for women mediated the relationship between social identity complexity and the endorsement of identity safety behaviors. Finally, because behavior can be facilitated or constrained by one's work environment, I investigated whether perceptions of one's institution as prioritizing the psychological and social safety of workers moderated being aware of threat and willingness to reduce it. While support was not found for the overall model, important findings did emerge that substantiated some of the relationships and offered initial answers to the research questions under study. The study findings are reviewed in light of extant literature and research, and theoretical and future research implications are drawn. Limitations of the study are discussed and the chapter concludes with implications for practice.

Relationship between Identity Complexity and Sensitivity to Threat

In accordance with hypothesis 1, I examined the individual difference construct of social identity complexity as a predictor of male sensitivity to threat. Three measures of social identity complexity were tested and none were found to significantly predict awareness of threat. Thus, there does not seem to be a relationship between having a complex representation of one's ingroups and acknowledgement of systemic threat for women. Past research on outcomes of social identity complexity has not looked at awareness of systemic inequity as a potential byproduct, which is distinct from support, liking, or tolerance for outgroups, the outcomes found to be associated with complexity in past studies (Brewer & Pierce, 2005; Miller et al., 2009; Roccas & Brewer, 2002; Schmid et al., 2009), thus the current hypothesis was truly in uncharted territory. The measure of male sensitivity to threat used in this study required a high level understanding of gender issues generally and within STEM in particular. Indeed, it was a measure of critical consciousness, requiring complex analysis as one must link the personal, the interpersonal, the cultural, and the societal, even when these forces diverge (Ramsey & Latting, 2005). Having this type of knowledge perhaps does not come most readily from individual differences. Ramsey and Latting (2005) discussed critical consciousness as an intergroup competency or a skill. Thus, there is the assumption that it does not come naturally; it must be nurtured and developed. For example, in counseling psychology, Sue, Arredondo, and McDavis (1992) made a call to the profession for the prioritizing of multicultural competence. Even though counseling psychologists are trained to work effectively in interpersonal relationships, the field had assumed a monocultural approach and generalizability of psychological theories (Sue, 2001). Thus, critical understanding of intergroup differences and culture had to be learned, and Sue et al. (1992) proposed doing so along three dimensions: (a) beliefs and attitudes, (b) knowledge, (c) skills. If we think of sensitivity to threat as falling under the knowledge

dimension, requiring understanding about gender stereotypes, norms, and expectations, then perhaps it is best viewed as a competency that must be developed, rather than a natural extension of individual difference.

If social identity complexity is not a predictor of male sensitivity to threat, did anything in the current study predict it? There were two related contextual factors that predicted awareness. The fewer women in a department and reduced contact with women colleagues both predicted sensitivity to threat. Said differently, the more experience that men had with women in a STEM context, the less likely they were to acknowledge systemic threat. This finding can also be linked to Ramsey and Latting's (1995) typology in which intergroup competency requires making connections between the personal, interpersonal, cultural, and societal. It could be that for men with greater contact with women, their personal and interpersonal experiences with women clouded their ability to make links to broader systemic factors of threat at cultural and societal levels. This connects to a point made earlier in this paper regarding a practical reason for why men may not see threat. With more STEM women around, it might be harder for men to acknowledge threat because it is outside their personal purview and they believe that their context, one in which women are presumably more accepted, represents the average state (Konrad & Spitz, 2003; McIntosh, 1988). There is also a motivational reason drawing on intergroup relations theories. Driven by self-interest and desire to maintain dominant status (Alderfer, 1987), perhaps the presence of more women gives men the justification they need to assert that social identity threat for STEM women is a nonissue, which would also serve to preserve their need for a positive view of their group (Tajfel & Turner, 1986).

Role of Male Sensitivity to Women's Threat on Study Outcomes

Although social identity complexity did not predict being sensitive to the systemic threats faced by STEM women, it was still important to consider if sensitivity to threat predicted positive outcomes for women facing social identity threat. In this study I examined male sensitivity to threat as a predictor of identity safety endorsement (hypothesis 2), and in supplemental analyses, I examined sensitivity to threat as a potential predictor of threat endorsement, avoidance endorsement, and affect. There was some support for a positive impact of awareness of threat in the form of being more likely to induce identity safety for a woman colleague in a social identity threatening situation, having more positive feelings toward her, and having more negative feelings toward the individual who triggered the threatening situation. These findings enhance our understanding of the positive outcomes associated with being aware of and acknowledging systemic inequity, and lend support to the scholarly area of workplace diversity and inclusion.

In previous workplace diversity and inclusion research, studies that have examined acknowledgement of inequities used items capturing concrete inequity in the form of discriminatory practices involving compensation, hiring, progress reports, and promotions (Konrad & Hartmann, 2001; Konrad & Spitz, 2003; Tougas & Beaton, 1993). The male sensitivity to threat scale used in the current study assesses more subtle discrimination in the form of negative stereotypes projected onto STEM women, thus offering greater nuance to how we conceptualize systemic inequity for women in organizations. With respect to affect, findings parallel research showing, among women, a positive link between perceptions of pervasive gender discrimination and positive emotion toward a woman who protested unfair treatment (Garcia, Schmitt, Branscombe, & Ellemers, 2010). The current study broadens this angle by finding that men who perceive social identity threat as pervasive have positive feelings toward a

woman who is being treated unfairly, and conversely, negative feelings toward the person who initiated mistreatment. With male sensitivity to threat, a form of critical consciousness, predicting situation specific identity safety endorsement, a theoretical contribution is made to the research on workplace diversity because of the attention paid to consciousness having implication for interpersonal relationships. This is in contrast to most studies in this area which focus on assessing support for equal opportunity and Affirmative Action policies (Harrison et al., 2006; Konrad & Hartmann, 2001; Konrad & Spitz, 2003; Tougas & Beaton, 1993), which does not tell us how people are likely to behave on a daily basis with different others at risk of threat. While evidence for a positive relationship has been found in the counseling literature with respect to gender conscious male feminist therapists and interpersonal interaction by way of feminist practices in therapy (e.g. ‘Suggest to my clients that differences between women and men are predominately the result of socially constructed gender roles’) (Szymanski, Baird, & Kornman, 2002), there is now some evidence of this relationship existing in a nontherapeutic context; that is, the workplace. Overall, these findings broaden the positive implications associated with raised consciousness concerning gender issues and builds on the scant research examining men’s behavior specifically.

Unexpectedly, however, sensitivity to threat did not predict support for engaging in identity safety behaviors more generally for women, which counters previous research and extant theory. For generally supporting endorsement of identity safety behaviors on behalf of STEM women, being sensitive to pervasive threat did not seem to matter. However, in instances where men had to envision themselves in a specific predicament, it was having a greater understanding of systemic social identity threat that increased the likelihood of challenging the status quo and reducing threat for a woman colleague. So why in this study did male sensitivity to threat relate

differentially to situation specific and general identity safety endorsement? One possible explanation relates to the higher level of risk posed to the individual when intervening in a specific situation. In completing the general measure of identity safety endorsement, it would have been relatively easy for participants to disregard any potential backlash they might face from other men for openly advocating on behalf of women. In completing the situation specific measure, such disregard was much less avoidable as advocating meant challenging one's colleagues. In a study examining the impact of confronting bias, Czopp and Monteith (2003) found that when an individual spoke out against a gender biased act, the primary reaction on the part of the perpetrator tended to be one of amusement or "a patronizing sense of condescension" (p. 541). At the same time, nontargets confronting a sexist act tended to increase feelings of guilt more than if the target herself had done the confronting. Thus if a man intervenes in a threatening situation on behalf of a female colleague, he could face reactions ranging from sarcasm to guilt, and must deal with the consequences. It could be that in order to choose jeopardizing a relationship with a colleague over jeopardizing the identity safety of a female exposed to threat, a man must understand the pervasive and deleterious nature of gender based threats. On the other hand, such understanding might not be necessary for supporting women more generally.

Role of Social Identity Complexity on Study Outcomes

Hypothesis 3 examined whether having a complex identity structure had positive implication for men's endorsement of identity safety behaviors on behalf of women, and supplemental analyses investigated the role of complexity on threat endorsement, avoidance endorsement, and affect. Prototypical complexity, or seeing fewer similarities between one's ingroups, was the complexity measure used in prior research and has been shown to have positive implications for intergroup relations (Roccas & Brewer, 2002; Schmid et al., 2009). In

the current study, however, there was no clear relationship between prototypical complexity and any of the study variables. The only finding was a marginal one, indicating that having increased complexity was associated with less likelihood of engaging in an identity safety behavior in specific situations, which contradicts previous research and my hypothesis. Differentiation, or complexity in which an individual acknowledges tension in beliefs and values between his ingroups, also related to study outcomes in an unexpected manner, predicting negative outcomes including endorsement of behaviors that made a threatening situation worse for a woman colleague and having negative affect toward her, albeit this was only when an individual could not integrate the differences he perceived between his ingroups. Integration, on the other hand, behaved as expected. First, as just pointed out, integration moderated the positive relationship between differentiation and exacerbating threat and differentiation and negative affect toward the victim such that these relationships were not significant at high levels of integration. Second, men who expressed willingness to engage in general or specific identity safety were more likely to possess the capacity for resolving conflicts between their ingroups regardless of their level of differentiation. Third, men who integrated were marginally less likely to avoid a threatening situation.

In making sense of the sets of findings that used prototypical, differentiation and integration assessments as predictors of study outcomes, several explanations and implications for social identity complexity theory surface. The first issue to consider is why prototypical complexity did not relate to study outcomes as anticipated. In general, complexity measured as ingroup prototypes has predicted positive outcomes (Roccas & Brewer, 2002; Schmid et al., 2009), but there is exception. For instance, Roccas and Brewer (2002) conducted their initial investigation of complexity using an Israeli and an American sample. While prototypical

complexity significantly predicted outgroup tolerance in the Israeli sample, the relationship was not significant in the American sample. In subsequent social identity complexity studies using U.S. samples, researchers chose not to use perceived similarity in prototypes as the measure of complexity. The only other study measuring complexity in this way utilized a sample in Northern Ireland. Because prototypical complexity has only been found to have positive influence on intergroup evaluations in non U.S. settings, the measure might not be cross culturally reliable.

The second issue to consider is why differentiation was associated with negative outcomes. Addressing this issue calls for reflecting on the measure and how it attempts to assess complexity compared to traditional measures. The main difference is that my measure taps into the specific content of one's ingroups by highlighting beliefs and values, while the traditional measures highlight cognitive schemas in the form of images and numerical overlap⁸. Therefore, the differentiation measure used here assesses the perceived ingrained differences between one's ingroups. At this level of chronic differentiation, Amiot, de la Sablonnière, Terry, & Smith's (2007) proposed that intergroup dynamics are heightened. Because an individual does not possess psychological coherence; that is, the perception of compatibilities between meaningful identities (Jaspal & Cinnirella, 2010), he may be inclined to exhibit outgroup derogation (Amiot et al., 2007). This could provide rationale for why higher differentiation, without integration, was associated with making threat worse and reduced liking for the woman facing threat. According to Roccas and Brewer (2002), an individual who differentiates but does not integrate, is someone who engages in dominance or compartmentalization (see Figure 6, top left). In dominance, one identity is highly differentiated from all others and preferentially activated, and in compartmentalization, multiple identities are differentiated and each is activated on a situational

⁸ Example item assessing numerical overlap: How many people who are STEM academics are also parents?

basis. Dominance is said to represent relatively low complexity while compartmentalization is said to represent relatively high complexity, but this study's findings suggest that compartmentalizing may not be complex enough to foster positive behavior toward outgroups.

The third issue to address is the role of integration and its relationship to differentiation. The positive outcomes associated with integration underscore its importance over differentiation for positive intergroup relations, which dovetails relevant theory on multiple social identity development (Amiot et al., 2007; Benet-Martínez & Haritatos; 2005). However, there's also the assumption that in order to achieve maximal integration, differences within one's identity structure and potential conflicts need to be recognized (Amiot et al., 2007; Phinney, 2003). Why then were positive outcomes not dependent on an interaction between differentiation and integration? It could be that for individuals with greater capacity for integrating were further along in reconciling their social identities where they no longer viewed diverging beliefs among their ingroups as different or conflicting, but complementary (Amiot & Jaspal, 2013). If so, then we would not have expected to see an interactive effect. There is also another explanation, but it contradicts the thinking that positive intergroup relations require both integration and differentiation (Amiot & Jaspal, 2013; Roccas & Brewer, 2002). According to Roccas and Brewer (2002), the most advantageous outcomes occur as a result of being high on both dimensions (see Figure 6, top right); they also proposed that integration alone is the least complex representation (see Figure 6, bottom right) and would therefore have detrimental impact on outgroup evaluations, yet because of the subtlety of their measures, they did not test for this directly. Because I assessed integration and differentiation directly, this study provided an initial examination of their assertion. Based on the findings, integration alone, without differentiation, could be enough for there to be positive implications for behavior toward outgroups.

Furthermore, in the case of individuals who highly differentiated between their ingroup, the capacity for integrating did matter, as it mitigated a man exacerbating threat and having negative feelings toward a victim of threat.

In summary, this study was the first to look at social identity complexity as a function of explicit differentiation and integration of the concomitant beliefs and values of one's important social group memberships. Roccas and Brewer (2002) described complexity along differentiation and integration levels, but went about measuring complexity using models of category representation and cognitive schemas. Owing to the dissimilitude in findings between the current study and previous studies examining social identity complexity, the focus of the measure seems to matter. This emphasizes the need for better articulation and refinement of social identity complexity if it is to be viewed as a function of differentiation and integration. Perhaps differentiation in the form of being able to perceive diversity in the representations of one's ingroups, as originally assessed by Roccas and Brewer (2002), leads to positive outgroup evaluations, but it is a boundary condition that does not extend to differentiation in the form of more symbolic aspects of social identity, such as beliefs and values, which leads to outgroup bias and derogation.

Role of Demographic and Contextual Factors on Study Outcomes

Though no explicit hypotheses were made regarding demographic variables or the contextual factor of contact with STEM women, several findings of note emerged in relation to identity safety, threat and avoidance endorsement, and affect. The first notable pattern further fosters a distinction between general and situation specific identity safety. Having more meaningful interactions with women predicted supporting them more generally through identity safety behaviors. This finding aligns with research where having more women in an academic

department positively predicted valuing efforts to promote diversity (Kossek & Zonia, 1993). Since women in general are more likely to value and recognize the need for diversity and inclusion efforts than men (Hicks & Iles, 2000; Kossek & Zonia, 1993), having increased numbers of women in an organization likely increases the overall number of co-workers who support diversity, which has been found to predict championing behavior with respect to diversity and inclusion (Cunningham & Sartore, 2010).

While having greater contact with women mattered for supporting them generally, it was status that really mattered in specific situations in which a woman colleague was facing threat. Men with more status in the form of academic tenure were more likely to reduce social identity threat for a woman in an interpersonal interaction than men with less status who did not have tenure. Also, tenured men were less likely to endorse avoidance as a strategy in reaction to a woman colleague in an identity threatening situation. These findings are encouraging on the one hand since demonstrative support for diversity from those in leadership positions has been publicized in theory and in practice as important for the overall effectiveness of managing cultural diversity in organizations (e.g. Cox, 1991; Hubbard, 2004; Sue, 1998). On the other hand, there is the implication that men with less status and job security are limited in their capacity to advocate for women. It could be that there is some risk in being an outspoken advocate, such that those lacking full job security and status were less inclined to help a colleague if it meant endangering their own professional safety. Tenure was not related to promoting safety for STEM women in general, where it may have been easier to overlook the risks associated with advocacy and challenging the status quo.

The second interesting pattern emerged around race and citizenship. Compared to white men, being a man of color predicted greater endorsement of threatening and avoidance

behaviors, greater liking of the perpetrator, and less liking of the victim of threat. Compared to U.S. citizens, being a non U.S. citizen predicted greater endorsement of avoidance behaviors, greater liking of the perpetrator, and less liking of the victim of threat. Thus, being in these demographic minority groups was associated with greater outgroup and ingroup bias. With respect to avoidance behavior, the explanation for this might be similar to the rationale of untenured men being less likely to intervene if it meant confronting another colleague. That is, being a member of a demographic minority group associated with lower status may have made the prospect of advocating for gender equity too risky. Also, most of the men of color in the sample identified as Asian or Pacific Islander, thus there may be a cultural reason for avoidance related to the value of high power distance associated with Eastern cultures (Hofstede, 1980). In this case, confronting someone with perceived greater power may have violated one's cultural norms.

An explanation for why being a man of color was associated with exacerbating threat and why men of color and non U.S. citizens were associated with less liking of the victim and more liking of the perpetrator comes from the intergroup relations literature. Multiple social categorization refers to what happens when individuals are categorized along more than one variable. In what is called the additive pattern, as the demographic characteristics between individuals increases, so do negative evaluations and outcomes (for review, see Crisp & Hewstone, 2007). Since neither race nor citizenship status of Lisa, the female protagonist in the vignettes, were specified, it is likely that participants made assumptions about her other characteristics. Given that statistically it is most probable that Lisa would have been white and a U.S. citizen, participants could have responded with these assumptions in mind. If so, then men of color and non U.S. citizens would have differed from Lisa on multiple categories, gender and

race, or gender and citizenship. Given previous research on additive patterns of multiple social categorization, it is reasonable to have found that increased differences between Lisa and participants of color and international men fostered greater outgroup and ingroup bias, while differing from Lisa on fewer categories, namely gender, fostered less outgroup and ingroup bias among white men and U.S. citizens. Whether this is actually what occurred is unknowable since data on perceptions of the demographics of Lisa was not collected, and this is a limitation of the study (Moreland & Leach, 2001).

Another explanation draws on the themes of power and status. Men of color and non U.S. citizens in American universities are, like women, minority groups with less power in STEM academe than their white male citizen counterparts. Social psychologists have explored the impact of low status on outgroup evaluations and behavior. For instance, Will's (1981) theory of downward comparison asserts that individuals can enhance psychological wellbeing by comparing themselves to those with lower status, and that psychological enhancement can be achieved through active derogation and harm toward a less fortunate other. Thus, it could be that as a way of managing their own chronically threatened social identities, lower status men had more negative affect toward a woman in a situation of social identity threat and were inclined to make the threat worse. There is also the notion that individuals are vested in believing in the justness of a particular social order, resulting in the internalization of inferiority and favoritism toward dominant outgroup members (Jost, Banaji, & Nosek, 2004). Thus, men of color and international men's reaction may have had less to do with the victim being lower status and more to the perception that the perpetrator of threat had greater power in a hierarchical system. A desire to be affiliated with a higher status individual could have motivated these men to align with the behavior of the perpetrator.

Moderating Role of Psychosocial Safety Climate

The main environmental factor of interest was psychosocial safety climate, which hypothesis 5 claimed would moderate the relationship between male sensitivity to threat and identity safety endorsement such that the relationship would be strengthened in a climate characterized by high safety. In general, perceived administration commitment to the psychosocial safety of faculty and staff did not play a role in facilitating aware men's endorsement of identity safety behaviors. In fact, psychosocial safety climate had a relationship to awareness of systemic threat that was unexpected. As perceptions of a safe climate increased, awareness decreased. Similar to why contact with women was negatively associated with awareness of systemic threat, it is possible that a local level experience of social safety suppresses one's ability to recognize the broader cultural and societal implications of being a woman in STEM (Ramsey & Latting, 2005). Perhaps not surprisingly, departments with more women also had higher psychosocial safety climates, thereby making it potentially harder for men to acknowledge systemic threat.

One significant finding was found that more than contributing to the literature on psychosocial safety climate, adds support for the combined effect of differentiation and integration of one's identity. In climates where the administration prioritized psychological and social health of employees, men who were most likely to engage in avoidance of an identity threatening situation faced by a woman colleague were those who perceived value based differences between their own ingroups but could not resolve them. Of note in this case is that even in a climate characterized as safe, a minimal capacity for holding a complex social identity structure precluded men from taking action to advocate for a woman under threat.

Psychosocial safety climate's lack of significant relationship to study variables does mean that the environment does not matter. There were other ways to examine the impact of psychosocial safety climate that may have improved the chance of finding significant results. For instance, I could have ascertained actual behaviors of men toward women in real rather than vignette-based environments. Another option would have been to vary the psychosocial safety climate through manipulation in the vignettes to see if it influenced endorsement of identity safety.

Findings Summary

Overall there are several conclusions to be drawn from this study. First, it seems important for men to be aware of systemic threat if they are to confront a colleague in order to engage in behaviors that promote identity safety for a woman colleague. Second, social identity complexity plays an important role in predicting identity safety endorsement. Increased integration of one's different social identities has positive implications for identity safety endorsement, while increased differentiation is associated with negative outcomes in the form of exacerbating threat and having less liking for the victim of threat. Integration plays an additional role by moderating the negative influence of differentiation such that men who are high on both differentiation and integration do not make a threatening situation worse and do not have less liking toward the victim. Third, higher status in the form of tenure seems to facilitate one's willingness to intervene in an interpersonal situation. Also, greater privilege in the form of being white and having U.S. citizenship means that a man is less likely to endorse an avoidance strategy in observing a situation where a woman faces threat. Fourth, being a man of color and having international status is associated with less liking for a victim of threat and greater likelihood of exacerbating threat. Finally, meaningful contact with women seems important for supporting them generally through identity safety behaviors.

Limitations

The current study was highly exploratory. All of the constructs under investigation were relatively new within the social identity threat and intergroup relations literatures, requiring the development and first time usage of some study measures. As a result, the reliability and validity associated with several measures are a limitation of the dissertation.

This study can be viewed as one of the first attempts to establish validity of the Group-directed Gender Identity Threat scale (Roberson et al., 2011) used to assess male sensitivity to threat. Having conducted an exploratory factor analysis, the factor structure is promising as is the measure's reliability ($\alpha = .93$), but results must still be interpreted with caution since full validation of the measure has not yet been established. More research is needed to conclude that the measure has construct validity.

I developed items to measure differentiation and integration. Each had adequate Cronbach's alpha, .84 and .83, respectively, but additional research using these items is needed in order to make greater claims of their reliability and validity as measures of identity differentiation and integration.

With identity safety never before being examined at the individual level, I had to design and develop a way of measuring these behaviors, which I attempted to do in two ways. One measure was a general assessment of identity safety behaviors using a Likert style scale. While it had good reliability ($\alpha = .86$) and initial factor structure, additional steps, such as a confirmatory factor analysis and assessment of association with measures believed to be related and unrelated to it, must be taken in order to claim it is a valid measure of identity safety behaviors. The other identity safety measure took the form of vignettes. Each index was created by averaging responses on the relevant item across the six vignettes. I reasoned that the behaviors were similar and represented various forms of identity safety as described in the social identity threat

literature. Cronbach's alpha for situation specific identity safety endorsement was .57, which is lower than the widely accepted minimum of .70. This does not mean, however, that any alpha lower than .70 is unacceptable, as what constitutes a high enough alpha "*is for the user to determine what amount of error he or she is willing to tolerate, given the specific circumstances of the study,*" (Pedhazur & Schmelkin, 1991, p. 346). Although not planned, the low reliabilities of situation specific safety were foreseeable given that it was not intended to measure a stable psychological construct. Rather, I was attempting to gather information about types of behaviors in which the context differed. It makes sense, then, that the alpha was probably constrained by the variability of the contexts in which an individual was asked to endorse safety. For instance, some vignettes asked an individual to discourage sexist behavior in front of the perpetrator alone, while others asked an individual to advocate in front of a group of people. This might make one wonder, then, why I did not treat each vignette as its own criterion variable. The answer relates to the original purpose of the study. Given the novelty of the topic, my main concern was about establishing general relationships between my variables rather than a focus on the impact of context on endorsement. The consequence of low reliabilities, however, includes underestimation of the true correlation between the measure and another variable and the potential for issues related to testing hypotheses (John & Benet-Martinez, 2000), which are not insignificant problems and could have played a role in why some expected relationships were not found. While I as the researcher have determined that the alphas for situation specific endorsement, as well as threat ($\alpha = .52$) and avoidance endorsement ($\alpha = .61$), which are also subject to the same limitation, are acceptable within the aims and circumstances of the current study, there is no question that higher reliabilities would have been better, since validity cannot be established without reliability.

Other limitations of the study result from the cross-sectional survey design. The present study was correlational in nature and claims of causal relationships between variables cannot be made (McGrath, 1982). It is possible, for instance, that male sensitivity to threat could enhance one's social identity complexity, though Roccas and Brewer (2002) did not identify any such antecedent as likely to influence complexity. Although steps were taken to minimize common method variance, the fact that operationalization of the study constructs were gathered at a single point in time from the same individual using self-report measures is a potential limitation (Podaskoff et al., 2003). Results may have been skewed because of this and researchers should try to measure the study variables utilizing more diverse methods of measurement, including objective and implicit measures. Objective and implicit measures would also help to minimize disadvantages associated with the use of self-report measures, including social desirability, response sets, and retrospective memory issues (Spector, 1994).

Although the study design and sampling process were developed to maximize external generalizability, the assumption that the results apply to all STEM men cannot be made. Certainly the internal weaknesses of the study limit the extent to which the findings generalize. Also, with only a 20% response rate, there could be an issue of nonresponse bias, such that those who self-selected into the study were different from those who chose not to participate at all or chose to partially complete the survey. Results might have differed had nonrespondents completed the questionnaire.

Directions for Future Research

Despite the dissertation's limitations, the implications and contributions of the research warrant further study of the proposed relationships. We know something about individual level identity safety behaviors and the kind of men who are willing to engage in them, and future

research should build on this knowledge. There are three suggested areas on which researchers can take aim.

First, the current study has importantly found divergence in findings with respect to whether men were asked to reflect on their willingness to endorse identity safety in general or in specific interpersonal situations. Namely, perceiving systemic threat mattered for endorsing identity safety in specific workplace interactions but not in general; having more professional status mattered for identity safety in specific workplace interactions but not in general; and having more meaningful interaction with women mattered for identity safety in general but not in specific workplace interactions. In order to clarify the conceptual and empirical distinction between general and specific endorsement, follow up studies could explore other antecedents that might differentially predict general and specific identity safety endorsement. Another avenue of research could unpack the potential consequences of engaging in identity safety generally versus interpersonally. For instance, it might be interesting to explore if women react differently to men's attempts at enhancing identity safety for women in general versus attempts at enhancing safety for oneself in specific situations of threat.

Second, the current study is unique in that it is the first of its kind to link social identity complexity with *behavior* toward outgroups rather than *evaluations* of outgroups. Ultimately the goal of intergroup relations theory and research is to reduce bias in thought and action between demographically different groups, and while connections between high complexity and greater outgroup tolerance and affect have been made, the next logical step was to examine its influence on behavior. This study has made an initial link, yet there is still much work to be done in this area. Since perception of one's behavior and not actual behavior was assessed, future research should examine actual behavior as an outcome of complexity, preferably using experimental

designs so as to establish causality. Research looking at the implications of complexity could also explore if advocacy behaviors occur not just in the presence of outgroup members, but in the presence of ingroup members on behalf of outgroup members. For instance, are high complexity men more likely to challenge bigoted comments or attitudes about women when in the company of other men compared to their low complexity male colleagues?

Third, men's acknowledgement of systemic threat did not act as a mediator in the current study, which is not surprising given the probability that it does not relate to social identity complexity. However, it does raise the question of what might mediate the relationship between complexity and identity safety endorsement, which future investigations should explore. Researchers could try known outcomes of social identity complexity, such as outgroup tolerance or support for multiculturalism (Brewer & Pierce, 2005; Roccas & Brewer, 2002; Schmid et al., 2009) to see if these mediate between complexity and either intended or actual behavior. Scholars could also investigate potential climate variables that may moderate complexity and behavior. Psychosocial safety climate could have been too distal a construct from the study's grounding in workplace diversity and inclusion. Thus, researchers may want to investigate climate for diversity as a possible moderator.

Practical Implications

The impetus for undertaking this research was the assertion that if gender equity and inclusion are to be realized within professional spheres, especially those that have been historically dominated by men, then we need men as supporters, advocates and diversity champions. STEM academe, with its well-known struggles to realize diversity and inclusion, took center stage in this study. If academic institutions want to work against systemic social identity threat (Castro et al., 2013), the leaky pipeline phenomenon (Blickenstaff, 2005),

women's feelings of isolation (National Academy of Sciences, 2010), and gender bias (Moss-Racusin et al., 2012), then this study's findings offer some practical implications.

Though not sufficient for full inclusion, increasing the demographic representation of women is necessary. Given that having more opportunities to meaningfully engage with women was associated with general willingness to promote identity safety, STEM academe needs to continue and enhance their efforts to recruit, retain, and advance women in their organizations. Also having more women is an indication of a positive climate for diversity (e.g. Leveson, Joiner, & Bakalis, 2009), which in and of itself can enhance identity safety (Purdie-Vaughns, 2008). At the same time, to reduce the suppression effect of a greater presence of women on awareness of systemic threat, organizations should educate men about social identity threat, including what it is, how it manifests, and most importantly, its pervasiveness and systemic nature. As demographic diversity within organizations increases over time, individuals might come to believe that social identity threats are not relevant simply because the local context seems to value diversity. Organizations need to provide education that helps men connect the personal to the cultural and societal embeddedness of threat since raised consciousness concerning threat was associated with greater willingness to advocate for a woman colleague in a threatening situation.

The other area to target for training concerns increasing self-awareness and complexity with respect to identity. While education of stereotypes and systemic threat is important (i.e. content), it is clear that the context can play a powerful role in being able to see threat, thus in addition to education around content, training for cognitive flexibility and adaptation in self-construal can perhaps lead to positive outcomes across more situations and contexts (Crisp & Hewstone, 2007). Trainings could be designed that help participants understand the multicultural

components of the self, including distinctions and tensions between ingroup memberships, while providing the social support and coping strategy suggestions needed to resolve conflicts (Amiot et al., 2007). These types of labs already have some standing and success with increasing complexity (Carter, 2003; Prime et al., 2012).

The concept of identity safety behaviors offers a new way for organizations and individuals to think about diversity and inclusion in action. There exists multiple guidelines for managing diversity at the organizational level (e.g., Cox & Blake, 1991; Gilbert, Stead, & Ivancevich, 1999; Hubbard, 2004), but specific behaviors that can help minimize threat in the workplace, thereby increasing inclusion, lack delineation. Since women's real experiences informed the development of the social identity threat vignettes, organizations could use the scenarios as a potentially safe vehicle for reflection and dialogue between men and women, while the proposed identity safety behaviors can be explored as viable interventions. Creating opportunities to strengthen relationships between men and women is an important one since meaningful interaction with women had more positive implications for promoting identity safety than merely having greater numbers of women in a department.

Finally, organizations should consider the role of status, race, and citizenship in designing and implementing trainings. Training and education may need to be tailored, giving appropriate attention to men as a diverse group with diverse needs. Because having less status can inhibit men from promoting safety for women, organizations should try to minimize actual and perceived negative consequences associated with challenging colleagues' threatening and exclusive behavior.

Conclusion

I long thought the sense of identity in a healthy individual to be essentially monolithic in nature...I have come to believe that the more healthy an individual is, the more consciously does he live in the knowledge that there are myriad “persons” – internal objects each bearing some sense-of-identity value – within him; and he recognizes this state of his internal world to be what it is; not threatened insanity, but the strength resident in the human condition. (Searles, 1979, p. 462, as cited in Saari, 1993)

It was this sentiment that drew me to the theory of social identity complexity and prompted me to explore it as an individual difference factor that could influence a man in seeing the systemic nature of social identity threat and engaging in inclusive behaviors that promote identity safety for women. Despite not working out as cleanly as that, this study has broken ground in the unexplored area of individual level identity safety, and expanded our understanding of social identity complexity as a theory and predictor of behavior.

References

- Adams, G., Garcia, D. M., Purdie-Vaughns, V., & Steele, C. M. (2006). The detrimental effects of a suggestion of sexism in an instruction situation. *Journal of Experimental Social Psychology*, 42, 602-615. doi:10.1016/j.jesp.2005.10.004
- Alderfer, C. P. (1987). An intergroup perspective on group dynamics.pdf. In J. W. Lorsch (Ed.), *Handbook of organizational behavior* (pp. 190–222). Englewood Cliffs, NJ: Prentice Hall.
- Amiot, C. E., de la Sablonnière, R., Terry, D. J., & Smith, J. R. (2007). Integration of social identities in the self: Toward a cognitive-developmental model. *Personality and Social Psychology Review*, 11(4), 364-388.
- Amiot, C.E. & Jaspal, R. (forthcoming, 2013). Identity integration, psychological coherence and identity threat: Linking identity process theory and notions of integration. In R. Jaspal & G.M. Breakwell (Eds.), *Identity process theory: Identity, social action and social change*. Cambridge: Cambridge University Press.
- Anderson, J. C., & Gerbing, D. W. (1991). Predicting the performance of measures in a confirmatory factor analysis with a pretest assessment of their substantive validities. *Journal of Applied Psychology*, 76(5), 732 - 740.
- Aronson, J., McGlone, M. S. (2009). Social identity and stereotype threat. In T. Nelson (Ed.), *Handbook of stereotyping, prejudice, and discrimination research* (pp. 153-178). New York: Psychology Press.
- Bakker, A. B., & Demerouti, E. (2007). The job demands-resources model: State of the art. *Journal of Managerial Psychology*, 22(3), 309–328. doi:10.1108/02683940710733115
- Bakker, A. B., Demerouti, E., & Euwema, M. C. (2005). Job resources buffer the impact of job demands on burnout. *Journal of Occupational Health Psychology*, 10(2), 170–180. doi:10.1037/1076-8998.10.2.170
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 5, 1173–1182.
- Barter, C., & Renold, E. (2000). “I wanna tell you a story”: Exploring the application of vignettes in qualitative research with children and young people. *International Journal of Social Research Methodology*, 3(4), 307–323. doi:10.1080/13645570050178594
- Benet-Martínez, V. & Haritatos, J. (2005). Bicultural identity integration (BII): Components and psychosocial antecedents. *Journal of Personality*, 73(4), 1015-1050.
- Bergeron, D. M., Block, C. J., & Echtenkamp, B. A. (2006). Disabling the able: Stereotype threat and women’s work performance. *Human Performance*, 19(2), 133–158.

- Bierema, L. L. (2005). Women's networks: A career development intervention or impediment? *Human Resource Development International*, 8(2), 207-224. doi:10.1080/13678860500100517
- Blickenstaff, J. C. (2005). Women and science careers: Leaky pipeline or gender filter? *Gender and Education*, 17, 369-386.
- Bond, S. A., Tuckey, M. R., & Dollard, M. F. (2010). Psychosocial safety climate, workplace bullying, and symptoms of posttraumatic stress. *Organization Development Journal*, 28(1), 37-56.
- Brewer, M. B., & Pierce, K. P. (2005). Social identity complexity and outgroup tolerance. *Personality & Social Psychology Bulletin*, 31(3), 428-437. doi:10.1177/0146167204271710
- Brown, R. P., & Pinel, E. C. (2003). Stigma on my mind: Individual differences in the experience of stereotype threat. *Journal of Experimental Social Psychology*, 39(6), 626-633. doi:10.1016/S0022-1031(03)00039-8
- Bussey, J. (May 4, 2012). Women, Welch clash at forum. *Wall Street Journal*. Retrieved from <http://online.wsj.com/article/SB10001424052702303877604577382321364803912.html>
- Cacioppo, J. T., Petty, R. E., & Kao, C. F. (1984). The efficient assessment of need for cognition. *Journal of Personality Assessment*, 48(3), 306-307.
- Capodilupo, C. M., Nadal, K. L., Corman, L., Hamit, S., Lyons, O. B., & Weinberg, A. (2010). The manifestation of gender microaggressions. In D. W. Sue (Ed.), *Microaggressions and marginality: Manifestation, dynamics, and impact*. (pp. 193-216). Hoboken, NJ: John Wiley & Sons, Inc.
- Carmeli, A. (2009). Positive work relationships, vitality, and job performance. In E. J. H. Charmine, N. M. Ashkanasy, & W. J. Zerbe (Eds.), *Research on emotion in organizations: Emotions in groups, organizational and cultures* (Vol. 5, pp. 45-71). Bradford, Great Britain: Emerald Group.
- Carter, R.T. (2003). Becoming racially and culturally competent: The racial-cultural counseling laboratory. *Journal of Multicultural Counseling and Development*, 31, 20-30.
- Castro, M. K., Block, C. J., Ferraris, D., & Roberson, L. (August, 2013). *Was my social identity just threatened? Making meaning of gendered cues in STEM academe*. Paper presented at the annual meeting of the Academy of Management, Orlando, Fl.
- Catalyst (2012a, December). Catalyst census: *Fortune* 500 women board directors. Retrieved from <http://www.catalyst.org/knowledge/2012-catalyst-census-fortune-500-women-board-directors>

- Catalyst (2012b, December). Catalyst census: *Fortune* 500 women executive officers and top earners. Retrieved from <http://www.catalyst.org/knowledge/2012-catalyst-census-fortune-500-women-executive-officers-and-top-earners>
- Catalyst (2012c, May). Women CEOs of the Fortune 1000. Retrieved from <http://www.catalyst.org/publication/271/women-ceos-of-the-fortune-1000>
- Catalyst (2009, September). Catalyst member benchmarking report. Retrieved from http://www.catalyst.org/file/306/bench_web.pdf
- Chao, G. T., & Moon, H. (2005). The cultural mosaic: A metatheory for understanding the complexity of culture. *The Journal of Applied Psychology*, 90(6), 1128–1140. doi:10.1037/0021-9010.90.6.1128
- Chung, B. G., Ehrhart, M. G., Holcombe Ehrhart, K., Hattrup, K., & Solamon, J. (2010). Stereotype threat, state anxiety, and specific self-efficacy as predictors of promotion exam performance. *Group & Organization Management*, 35(1), 77–107. doi:10.1177/1059601109354839
- Connell, R. W. (2003). *The role of men and boys in achieving gender equality* (pp. 1-39). Brasilia, Brazil. Retrieved from <http://www.ashanet.org/focusgroups/sanctuary/articles/Connell-bp.pdf>
- Cook, C., Heath, F., & Thompson, R. L. (2000). A meta-analysis of response rates in web- or internet-based surveys. *Educational and Psychological Measurement*, 60(6), 821–836. doi:10.1177/00131640021970934
- Cortina, L. M. (2008). Unseen injustice: Incivility as modern discrimination in organizations. *Academy of Management Review*, 33(1), 55–75. doi:10.5465/AMR.2008.27745097
- Couper, M. P., Traugott, M. W., & Lamias, M. J. (2001). Web survey design and administration. *Public Opinion Quarterly*, 65, 230–253.
- Cox, T. H. (1991). The multicultural organization. *Academy of Management Executive*, 5(2), 34–47.
- Cox, T. H., & Blake, S. (1991). Managing cultural diversity: Implications for organizational competitiveness. *Academy of Management Executive*, 5(3), 45–56.
- Crawford, S. D., Couper, M. P., & Lamias, M. J. (2001). Web surveys: Perceptions of burden. *Social Science Computer Review*, 19(2), 146–162. doi:10.1177/089443930101900202
- Crisp, R. J., & Hewstone, M. (2007). Multiple social categorization. In M. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 39, pp. 163-254). San Diego, CA: Academic Press. doi:10.1016/S0065-2601(06)39004-1

- Crocker, J., & Major, B. (1989). Social stigma and self-esteem: The self-protective properties of stigma. *Psychological Review*, 96, 608-630.
- Cunningham, G. B., & Sartore, M. L. (2010). Championing diversity: The influence of personal and organizational antecedents. *Journal of Applied Social Psychology*, 40(4), 788–810. doi:10.1111/j.1559-1816.2010.00598.x
- Davies, P. G., Spencer, S. J., Quinn, D. M., & Gerhardstein, R. (2002). Consuming images: How television commercials that elicit stereotype threat can restrain women academically and professionally. *Personality and Social Psychology Bulletin*, 28, 1615-1628.
- Davies, P. G., Spencer, S. J., & Steele, C. M. (2005). Clearing the air: Identity safety moderated the effects of stereotype threat on women's leadership aspirations. *Journal of Personality and Social Psychology*, 88, 276-287.
- Davis, M. A., LaRosa, P. A., & Foshee, D. P. (1992). Emotion work in supervisor-subordinate relations: Gender differences in the perception of angry displays. *Sex Roles*, 26(11-12), 513–531. doi:10.1007/BF00289872
- Deaux, K. (1993). Reconstructing social identity. *Personality and Social Psychology Bulletin*, 19(1), 4-12. doi:10.1177/0146167293191001
- Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology*, 86(3), 499–512. doi:10.1037//0021-9010.86.3.499
- Dollard, M. F., & Bakker, A. B. (2010). Psychosocial safety climate as a precursor to conducive work environments, psychological health problems, and employee engagement. *Journal of Occupational and Organizational Psychology*, 83(3), 579-599. doi:10.1348/096317909X470690
- Dollard, M. F., & Karasek, R. A. (2010). Building psychosocial safety climate: Evaluation of a socially coordinated PAR risk management stress prevention study. In J. Houdmont & L. Stavroula (Eds.), *Contemporary occupational health psychology: Global perspectives on research and practice* (Volume 1., pp. 208–233). West Sussex, UK: John Wiley & Sons.
- Dollard, M. F., & McTernan, W. (2011). Psychosocial safety climate: A multilevel theory of work stress in the health and community service sector. *Epidemiology and Psychiatric Sciences*, 20(4), 287–293. doi:10.1017/S2045796011000588
- Dollard, M. F., Tuckey, M. R., & Dormann, C. (2012). Psychosocial safety climate moderates the job demand-resource interaction in predicting workgroup distress. *Accident Analysis and Prevention*, 45, 694–704. doi:10.1016/j.aap.2011.09.042

- Edwards, J. R., & Lambert, L. S. (2007). Methods for integrating moderation and mediation: A general analytical framework using moderated path analysis. *Psychological Methods, 12*(1), 1–22. doi:10.1037/1082-989X.12.1.1
- Field, A. (2013). *Discovering statistics using IBM SPSS statistics* (4th ed.). London: Sage Publications.
- Finch, J. (1987). The vignette technique in survey research. *Sociology, 21*(1), 105–114. doi:10.1177/0038038587021001008
- Flood, M. (2005). Mainstreaming men in gender development. *AusAID Gender Seminar Series* (pp. 1–18). Canberra.
- Friedman, R. A. (1996). Defining the scope and logic of minority and female network groups: Can separation enhance integration? In G. R. Ferris (Ed.), *Research in personnel and human resources management* (Volume 14., pp. 307-349). Greenwich, CN: JAI Press.
- Fritz, M. S., & Mackinnon, D. P. (2007). Required sample size to detect the mediated effect. *Psychological Science, 18*(3), 233–239. doi:10.1111/j.1467-9280.2007.01882.x.Required
- Garcia, D. M., Schmitt, M. T., Branscombe, N. R., & Ellemers, N. (2010). Women's reactions to ingroup members who protest discriminatory treatment: The importance of beliefs about inequality and response appropriateness. *European Journal of Social Psychology, 40*, 733–745. doi:10.1002/ejsp
- Gersick, C. J. G., Dutton, J. E., & Bartunek, J. M. (2000). Learning from academia: The importance of relationships in professional life. *Academy of Management Journal, 43*(6), 1026-1044. doi:10.2307/1556333
- Gilbert, J., Stead, A. B., & Ivancevich, J. M. (1999). Diversity Management: A new organizational paradigm. *Journal of Business Ethics, 21*, 61-76.
- Good, C., Rattan, A., & Dweck, C. S. (2012). Why do women opt out? Sense of belonging and women's representation in mathematics. *Journal of Personality and Social Psychology, 102*(4), 700-17. doi:10.1037/a0026659
- Guttek, B. A., Cohen, A. G., & Tsui, A. (1996). Reactions to perceived sex discrimination. *Human Relations, 49*(6), 791-813. doi:10.1177/001872679604900604
- Hall, G. B., Dollard, M. F., & Coward, J. (2010). Psychosocial safety climate: Development of the PSC-12. *International Journal of Stress Management, 17*(4), 353–383. doi:10.1037/a0021320
- Hall, G. B., Dollard, M. F., Winefield, A. H., Dormann, C., & Bakker, A. B. (2012). Psychosocial safety climate buffers effects of job demands on depression and positive

- organizational behaviors. *Anxiety, Stress, and Coping: An International Journal*, 1–23. doi:10.1080/10615806.2012.700477
- Harrison, D. A., Kravitz, D. A., Mayer, D. M., Leslie, L. M., & Lev-Arey, D. (2006). Understanding attitudes toward affirmative action programs in employment: Summary and meta-analysis of 35 years of research. *The Journal of Applied Psychology*, 91(5), 1013–1036. doi:10.1037/0021-9010.91.5.1013
- Harrison, D. A., & McLaughlin, M. E. (1993). Cognitive processes in self-report responses: Tests of item context effects in work attitude measures. *The Journal of Applied Psychology*, 78(1), 129–140. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/8449851>
- Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication Monographs*, 76(4), 408–420. doi:10.1080/03637750903310360
- Hayes, A. F. (2012). PROCESS: A versatile computational tool for observed variable mediation, moderation, and conditional process modeling [White paper]. Retrieved from <http://www.afhayes.com/public/process2012.pdf>
- Hicks-Clarke, D., & Iles, P. (2000). Climate for diversity and its effects on career and organisational attitudes and perceptions. *Personnel Review*, 29(3), 324–345. doi:10.1108/00483480010324689
- Hinkin, T. R. (1998). A brief tutorial on the development of measures for use in survey questionnaires. *Organizational Research Methods*, 1(1), 104–121. doi:10.1177/109442819800100106
- Hofstede, G. (1980). *Culture's consequences: International differences in work-related values*. Beverly Hills: Sage Publications.
- Holt, D. T., Armenakis, A. A., Feild, H. S., & Harris, S. G. (2007). Readiness for organizational change: The systematic development of a scale. *The Journal of Applied Behavioral Science*, 43(2), 232–255. doi:10.1177/0021886306295295
- Hubbard, E. E. (2004). *The diversity scorecard: Evaluating the impact of diversity organizational performance*. Burlington, MA: Elsevier Butterworth-Heinemann.
- Hughes, R. (1998). Considering the vignette technique and its application to a study of drug injecting and HIV risk and safer behaviour. *Sociology of Health & Illness*, 20(3), 381–400.
- Hughes, R., & Huby, M. (2002). The application of vignettes in social and nursing research. *Journal of Advanced Nursing*, 37(4), 382–386. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/11872108>

- Idris, M. A., Dollard, M. F., Coward, J., & Dormann, C. (2012). Psychosocial safety climate: Conceptual distinctiveness and effect on job demands and worker psychological health. *Safety Science*, 50(1), 19–28. doi:10.1016/j.ssci.2011.06.005
- Idris, M. A., Dollard, M. F., & Winefield, A. H. (2011). Integrating psychosocial safety climate in the JD-R model: A study amongst Malaysian workers. *SA Journal of Industrial Psychology*, 37(2), 1–11. doi:10.4102/sajip.v37i2.851
- Inzlicht, M., & Kang, S. K. (2010). Stereotype threat spillover: How coping with threats to social identity affects aggression, eating, decision making, and attention. *Journal of Personality and Social Psychology*, 99(3), 467–481. doi:10.1037/a0018951
- Inzlicht, M., Aronson, J., Good, C., & McKay, L. (2006). A particular resiliency to threatening environments. *Journal of Experimental Social Psychology*, 42(3), 323–336. doi:10.1016/j.jesp.2005.05.005
- Izraeli, D. N., & Tabor, E. (1986). The perception of women's status in Israel as a social problem. *Sex Roles*, 14(11-12), 663–678. doi:10.1007/BF00287696
- Jaspal, R., & Cinnirella, M. (2010). Coping with potentially incompatible identities: Accounts of religious, ethnic, and sexual identities from British Pakistani men who identify as Muslim and gay. *British Journal of Social Psychology*, 49, 849–870.
- John, O. P. & Benet-Martinez, V. (2000). Measurement: Reliability, construct validation, and scale construction. In H.T. Reis and C.M. Judd (Eds.), *Handbook of research methods in social and personality psychology* (pp. 339–369). New York: Cambridge University Press.
- Jost, J. T., Banaji, M. R., & Nosek, B. A. (2004). A decade of system justification theory: Accumulated evidence of conscious and unconscious bolstering of the status quo. *Political Psychology*, 25(6), 881–919.
- Kahn, W. A. (1990). Psychological conditions of personal engagement and disengagement at work. *Academy of Management Journal*, 33(4), 692–724.
- Kaiser, C. R., Vick, S. B., & Major, B. (2006). Prejudice expectations moderate preconscious attention to cues that are threatening to social identity. *Psychological Science*, 17(4), 332–338. doi:10.1111/j.1467-9280.2006.01707.x
- Konrad, A. M., & Hartmann, L. (2001). Gender differences in attitudes toward affirmative action programs in Australia: Effects of beliefs, interests, and attitudes toward women. *Sex Roles*, 45(5/6), 415–432.
- Konrad, A. M., & Spitz, J. (2003). Explaining demographic group differences in affirmative action attitudes. *Journal of Applied Social Psychology*, 33(8), 1618–1642.

- Kossek, E. E., & Zonia, S. C. (1993). Assessing diversity climate: A field study of reactions to employer efforts to promote diversity. *Journal of Organizational Behavior*, 14(1), 61–81.
- Kray, L. J., & Shirako, A. (2011). Stereotype threat in organizations: An examination of its scope, triggers, and possible interventions. In M. Inzlicht & T. Schmader (Eds.), *Stereotype threat: Theory, process, and application* (pp. 173-187). New York: Oxford University Press.
- Law, R., Dollard, M. F., Tuckey, M. R., & Dormann, C. (2011). Psychosocial safety climate as a lead indicator of workplace bullying and harassment, job resources, psychological health and employee engagement. *Accident Analysis and Prevention*, 43(5), 1782–1793. doi:10.1016/j.aap.2011.04.010
- Leveson, L., Joiner, T. a., & Bakalis, S. (2009). Managing cultural diversity and perceived organizational support: Evidence from Australia. *International Journal of Manpower*, 30(4), 377–392. doi:10.1108/01437720910973061
- Lewin, K. (1939). Field theory and experiment in social psychology: Concepts and methods. *American Journal of Sociology*, 44, 868-896.
- Logel, C., Walton, G. M., Spencer, S. J., Iserman, E. C., Von Hippel, W., & Bell, A. E. (2009). Interacting with sexist men triggers social identity threat among female engineers. *Journal of Personality and Social Psychology*, 96(6), 1089–1103. doi:10.1037/a0015703
- Mackinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., & Sheets, V. (2002). A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods*, 7(1), 83–116.
- Major, B., & O'Brien, L. T. (2005). The social psychology of stigma. *Annual Review of Psychology*, 56, 393-421.
- Markus, H. R., Steele, C. M., & Steele, D. M. (2000). Colorblindness as a barrier to inclusion: Assimilation and nonimmigrant minorities. *Daedalus*, 129(4), 233-259.
- May, D. R., Gilson, Richard, L., & Harter, L. M. (2004). The psychological conditions of meaningfulness, safety, and availability and the engagement of the human spirit at work. *Journal of Occupational and Organizational Psychology*, 77, 11-37.
- McGrath, J. E. (1982). Dilemmatics: The study of research choices & dilemmas. In J. E. McGrath, J. Martin, & R. A. Kulka (Eds.), *Judgment calls in research* (pp. 69-102). Beverly Hills: Sage Publications.
- McIntosh, P. (1988). White privilege and male privilege: A personal account of coming to see correspondences through work in women's studies. Wellesley, MA: Wellesley College Center for Research on Women.

- Miller, K. P., Brewer, M. B., & Arbuckle, N. L. (2009). Social identity complexity: Its correlates and antecedents. *Group Processes & Intergroup Relations*, 12(1), 79-94. doi:10.1177/1368430208098778
- MIT. (2011). *A report on the status of women faculty in the schools of science and engineering at MIT*. Cambridge, MA.
- Monroe, K., Ozyurt, S., Wrigley, T., & Alexander, A. (2008). Gender equality in academia: Bad news from the trenches, and some possible solutions. *Perspectives on Politics*, 6(2), 215-233. doi:10.1017/S1537592708080572
- Mor Barak, M. E., Cherin, David, A., & Berkman, S. (1998). Organizational and personal dimensions in diversity climate: Ethnic and gender differences in employee perceptions. *Journal of Applied Behavioral Science*, 34(1), 82-104. doi:10.1177/0021886398341006
- Moreland, C. & Leach, M. M. (2001). The relationship between black racial identity development and moral development. *Journal of Black Psychology*, 27, 255-271.
- Moss-Racusin, C. A., Dovidio, J. F., Brescoll, V. L., Graham, M. J., & Handelsman, J. (2012). Science faculty's subtle gender biases favor male students. In S. Tilghman (Ed.), *Proceedings of the National Academy of Sciences*. doi:10.1073/pnas.1211286109
- Murphy, M. C., Steele, C. M., & Gross, J. J. (2007). Signaling threat: How situational cues affect women in math, science, and engineering settings. *Psychological Science*, 18(10), 879-886.
- National Science Foundation, National Center for Science and Engineering Statistics (2011). *Science and Engineering Degrees: 1966-2008*. Detailed Statistical Tables NSF 11-316. Arlington, VA. Available at <http://www.nsf.gov/statistics/nsf11316/>.
- National Science Foundation, National Center for Science and Engineering Statistics, Survey of Doctorate Recipients (2010). *Science, engineering, and health doctorate holders employed in universities and 4-year colleges, by type of academic position, sex, race/ethnicity, and disability status*. Detailed Statistical Tables NSF 9-22. Arlington, VA. Available at <http://www.nsf.gov/statistics/wmpd/2013/pdf/tab9-22.pdf>.
- Ngo, H., Foley, S., Wong, A., & Loi, R. (2003). Who gets more of the pie? Predictors of perceived gender inequity at work. *Journal of Business Ethics*, 45, 227-241.
- Nguyen, H.-H. D., & Ryan, A. M. (2008). Does stereotype threat affect test performance of minorities and women? A meta-analysis of experimental evidence. *The Journal of Applied Psychology*, 93(6), 1314-1334. doi:10.1037/a0012702
- Niemann, Y. F. (1999). The making of a token: A case study of stereotype in academe threat, stigma, racism, and tokenism. *Frontiers: A Journal of Women Studies*, 20(1), 111-134.

- The National Organization for Men Against Sexism (2008). Statement of principles. Retrieved from <http://www.nomas.org/principles>.
- Parker, C. P., Baltes, B. B., Young, S. A., Huff, J. W., Altmann, R. A., LaCost, H. A., & Roberts, J. E. (2003). Relationships between psychological climate perceptions and work outcomes: A meta-analytic review. *Journal of Organizational Behavior*, 24(4), 389-416. doi:10.1002/job.198
- Pell, A. N. (1996). Fixing the leaky pipeline: Women scientists in academia. *Journal of Animal Science*, 74, 2843-2848.
- Pedhazur, E. J., & Schmelkin, L. P. (1991). *Measurement, design, and analysis: An integrated approach*. Hillsdale, NJ: Erlbaum.
- Petriglieri, J. L. (2011). Under threat: Responses to and the consequences of threats to individuals' identities. *Academy of Management Journal*, 36, 641-662.
- Phinney, J. S. (2003). Ethnic identity and acculturation. In K. M. Chun, P. Balls Organista, & G. Marín, Gerardo (Eds.), *Acculturation: Advances in theory, measurement, and applied research* (pp. 63-81). Washington, DC: American Psychological Association.
- Pinel, E. C. (1999). Stigma consciousness: The psychological legacy of social stereotypes. *Journal of Personality and Social Psychology*, 76, 114-128.
- Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *The Journal of Applied Psychology*, 88(5), 879-903. doi:10.1037/0021-9010.88.5.879
- Porter, S. R., & Whitcomb, M. E. (2003). The impact of contact type on web survey response rates. *Public Opinion Quarterly*, 67, 579-588.
- Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers*, 36(4), 717-731.
- Preacher, K. J., Rucker, D. D., & Hayes, A. F. (2007). Addressing moderated mediation hypotheses: Theory, methods, and prescriptions. *Multivariate Behavioral Research*, 42(1), 185-227. doi:10.1080/00273170701341316
- Prime, J., Foust-Cummings, H., Salib, E. R., & Moss-Racusin, C. A. (2012). *Calling all white men: Can training help create inclusive workplaces?* (pp. 1-16). New York: Catalyst.
- Purdie-Vaughns, V., Steele, C. M., Davies, P. G., Dittmann, R., & Crosby, J. R. (2008). Social identity contingencies: How diversity cues signal threat or safety for African Americans in mainstream institutions. *Journal of Personality and Social Psychology*, 94(4), 615-30. doi:10.1037/0022-3514.94.4.615

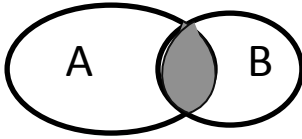
- Purdie-Vaughns, V., & Walton, G. M. (2011). Is multiculturalism bad for African-Americans? Redefining inclusion through the lens of identity safety. In R. K. (Ed. Tropp, Linda R.(Ed); Mallett (Ed.), *Moving beyond prejudice reduction: Pathways to positive intergroup relations* (pp. 159-177). Washington, D. C.: American Psychological Association. doi:10.1037/12319-008
- Ramsey, V. J., & Latting, J. K. (2005). A typology of intergroup competencies. *The Journal of Applied Behavioral Science*, 41(3), 265–284.
- Roberson, L., Fudman, R., & Pegues, D. (2011). Development of a scale for self-directed and group-directed gender identity threat. Poster presented at Annual Mini-conference, Program in Social-Organizational Psychology, New York.
- Roberson, L., & Kulik, C. T. (2007). Stereotype threat at work. *Academy of Management Perspectives*, 21(2), 24-40. doi:10.5465/AMP.2007.25356510
- Roberson, L., Deitch, E. A, Brief, A. P., & Block, C. J. (2003). Stereotype threat and feedback seeking in the workplace. *Journal of Vocational Behavior*, 62(1), 176-188. doi:10.1016/S0001-8791(02)00056-8
- Roccas, S., & Brewer, M. B. (2002). Social identity complexity. *Personality and Social Psychology Review*, 6(2), 88-106. doi:10.1207/S15327957PSPR0602_01
- Rosser, S. V., & O'Neil Lane, E. (2002). Key barriers for academic institutions seeking to retain female scientists and engineers: Family-unfriendly policies, low numbers, stereotypes, and harassment. *Journal of Women and Minorities in Science and Engineering*, 8, 161-189.
- Ruggiero, K. M., & Taylor, D. M. (1995). Coping with discrimination: How disadvantaged group members perceive the discrimination that confronts them. *Journal of Personality and Social Psychology*, 68, 826-838.
- Ruggiero, K. M., & Taylor, D. M. (1997). Why minority group members perceive or do not perceive the discrimination that confronts them: The role of self-esteem and perceived control. *Journal of Personality and Social Psychology*, 72, 373-389.
- Saari, C. (1993). Identity complexity as an indicator of health. *Clinical Social Work Journal*, 21(1), 11-24.
- Searles, H. R. (1979). Dual- and multiple-identity processes in borderline ego functioning, in *Countertransference and related subjects: Selected papers* (pp. 460-478). New York: International Universities Press.
- Shapiro, J. R., & Neuberg, S. L. (2007). From stereotype threat to stereotype threats: Implications of a multi-threat framework for causes, moderators, mediators, consequences, and interventions. *Personality and Social Psychology Review*, 11(2), 107–130. doi:10.1177/1088868306294790

- Schmid, K., Hewstone, M., Tausch, N., Cairns, E., & Hughes, J. (2009). Antecedents and consequences of social identity complexity: Intergroup contact, distinctiveness threat, and outgroup attitudes. *Personality & Social Psychology Bulletin*, 35(8), 1085-1098. doi:10.1177/0146167209337037
- Schneider, B., & Reichers, A. E. (1983). On the etiology of climates. *Personnel Psychology*, 36(1), 19-39.
- Schoenberg, N. E., & Ravdal, H. (2000). Using vignettes in awareness and attitudinal research. *International Journal of Social Research Methodology*, 3(1), 63-74. doi:10.1080/136455700294932
- Schwartz, S. H. (1992). Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 25, pp. 1-65). New York: Academic Press.
- Shapiro, J. R., & Neuberg, S. L. (2007). From stereotype threat to stereotype threats: Implications of a multi-threat framework for causes, moderators, mediators, consequences, and interventions. *Personality and Social Psychology Review*, 11(2), 107-130. doi:10.1177/1088868306294790
- Shinew, K. J., & Arnold, M. L. (1998). Gender equity in the leisure services field. *Journal of Leisure Research*, 30(2), 177-194.
- Shrout, P. E., & Bolger, N. (2002). Mediation in experimental and nonexperimental studies: New procedures and recommendations. *Psychological Methods*, 7(4), 422-445. doi:10.1037//1082-989X.7.4.422
- Sidanius, J., & Pratto, F. (1999). *Social dominance: An intergroup theory of social hierarchy and oppression*. Cambridge, UK: Cambridge University Press.
- Sobel, M. E. (1982). Asymptotic intervals for indirect effects in structural equations models. In S. Leinhardt (Ed.), *Sociological methodology* (pp.290-312). San Francisco: Jossey-Bass.
- Spencer, S. J., Steele, C. M., & Quinn, D. M. (1999). Stereotype threat and women's math performance. *Journal of Experimental Social Psychology*, 35, 4-28.
- Spector, P. E. (1994). Using self-report questionnaires in OB research: A comment on the use of a controversial method. *Journal of Organizational Behavior*, 15(5), 385-392.
- Steele, C. M. (1997). A threat in the air: How stereotypes shape intellectual identity and performance. *American Psychologist*, 52, 613-629.
- Steele, C. M., & Aronson, J. (1995). Stereotype threat and the intellectual test performance of African Americans. *Journal of Personality and Social Psychology*, 69, 797-811.

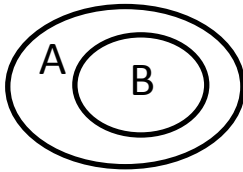
- Steele, C. M., Spencer, S. J., & Aronson, J. (2002). Contending with group image: The psychology of stereotype and social identity threat. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 34). San Diego, CA: Academic Press.
- Stryker, S., & Burke, P. J. (2000). The past, present, and future of an identity theory. *Social Psychology Quarterly*, 63(4), 284-297.
- Sue, D. (1998). *Multicultural counseling competencies: Individual and organizational development*. Thousand Oaks, CA: Sage Publications, Inc.
- Sue, D. W. (2001). Multidimensional facets of cultural competence. *The Counseling Psychologist*, 29(6), 790-821. doi:10.1177/0011000001296002
- Sue, D. W., Arredondo, P., & McDavis, R. J. (1992). Multicultural counseling competencies and standards: A call to the profession. *Journal of Counseling and Development*, 70, 477-486.
- Sue, D. W., Capodilupo, C. M., Torino, G. C., Bucceri, J. M., Holder, A. M. B., Nadal, K. L., & Esquilin, M. (2007). Racial microaggressions in everyday life: Implications for clinical practice. *The American Psychologist*, 62(4), 271-86. doi:10.1037/0003-066X.62.4.271
- Szymanski, D. M., Baird, M. K., & Kornman, C. L. (2002). The feminist male therapist: Attitudes and practices for the 21st century. *Psychology of Men & Masculinity*, 3(1), 22-27. doi:10.1037//1524-9220.3.1.22
- Tajfel, H., & Turner, J. C. (1986). The social identity theory of intergroup behavior. In S. Worchel & W. G. Austin (Eds.), *The psychology of intergroup relations* (2nd ed., pp. 7-24). Chicago, IL: Nelson-Hall.
- Tetlock, P. E. (1983). Accountability and complexity of thought. *Journal of Personality and Social Psychology*, 45, 74-83.
- The National Academies. (2001). *From scarcity to visibility: Gender differences in the careers of doctoral scientists and engineers*. Washington, D.C.: The National Academies Press.
- The National Academies. (2006). *Beyond bias and barriers: Fulfilling the potential of women in academic science and engineering*. Washington, D.C.: The National Academies Press.
- The National Academies. (2010). *Gender differences at critical transition in the careers of science, engineering, and mathematics faculty*. Washington, D.C.: The National Academies Press.
- Tougas, F., & Beaton, A. M. (1993). Affirmative action in the work place: For better or for worse. *Applied Psychology: An International Review*, 42(3), 253-264. doi:10.1111/j.1464-0597.1993.tb00741.x

- Tougas, F., & Veilleux, F. (1990). The response of men to affirmative action strategies for women: The study of a predictive model. *Canadian Journal of Behavioral Science*, 22(4), 424–432.
- Umbach, P. D. (2005). Web surveys: Best practices. *New Directions for Institutional Research*, (121), 23–38.
- van der Pas, S., van Tilburg, T., & Knipscheer, K. C. P. M. (2005). Measuring older adults' filial responsibility expectations: Exploring the application of a vignette technique and an item scale. *Educational and Psychological Measurement*, 65(6), 1026–1045.
doi:10.1177/0013164405278559
- van Soest, D. (1996). Impact of social work education on student attitudes and behavior concerning oppression. *Journal of Social Work Education*, 32(2), 191–202.
- von Hippel, C., Issa, M., Ma, R., & Stokes, (2011). Stereotype threat: Antecedents and consequences for working women. *European Journal of Social Psychology*, 41, 151-161.
- Walton, G. M., & Cohen, G. L. (2007). A question of belonging: Race, social fit, and achievement. *Journal of Personality and Social Psychology*, 92(1), 82-96.
doi:10.1037/0022-3514.92.1.82
- Wason, K. D., Polonsky, M. J., & Hyman, M. R. (2002). Designing vignette studies in marketing. *Australasian Marketing Journal*, 10(3), 41–58. doi:10.1016/S1441-3582(02)70157-2
- Webster, D. M., & Kruglanski, A. W. (1994). Individual differences in need for cognitive closure. *Journal of Personality and Social Psychology*, 67(6), 1049–1062.
- Weick, K. E. (1995). *Sensemaking in organizations*. Thousand Oaks, CA: Sage Publications.
- Wills, T. A. (1981). Downward comparison principles in social psychology. *Psychological Bulletin*, 90(2), 245-271.
- Zimmermann, B. K., Dormann, C., & Dollard, M. F. (2009). Reciprocity and stress in service interactions: Main and moderating effects of psychosocial safety climate. In P. H. Langford, N. J. Reynolds, & J. E. Kehoe (Eds.), *8th Industrial and Organizational Psychology Conference (IOP)* (pp. 151–155). Australian Psychological Society.

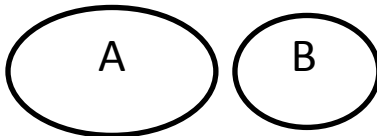
Figure 1. Venn schematic representation of multiple ingroup identity structures, adapted from Roccas and Brewer (2002).



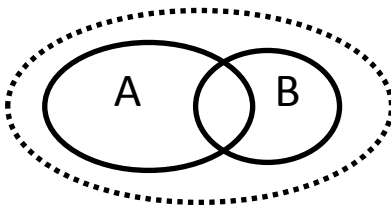
(a) Intersection – Identity is represented as the junction of A and B (i.e. $A \cap B$)



(b) Dominance – Identity is represented as A with Identity B viewed as a facet of A (i.e. $A \supset B$)



(c) Compartmentalization – Identity A is dominant in certain situations and Identity B is dominant in other situations (i.e. $A \text{ or } B$)



(d) Merger – Identity A and B are represented simultaneously, overlapping and non-overlapping components inclusive (i.e. $A \cup B$)

Figure 2. A moderated mediation model of the relationship between social identity complexity, male sensitivity to women's identity threat, identity safety endorsement, and psychosocial safety climate.

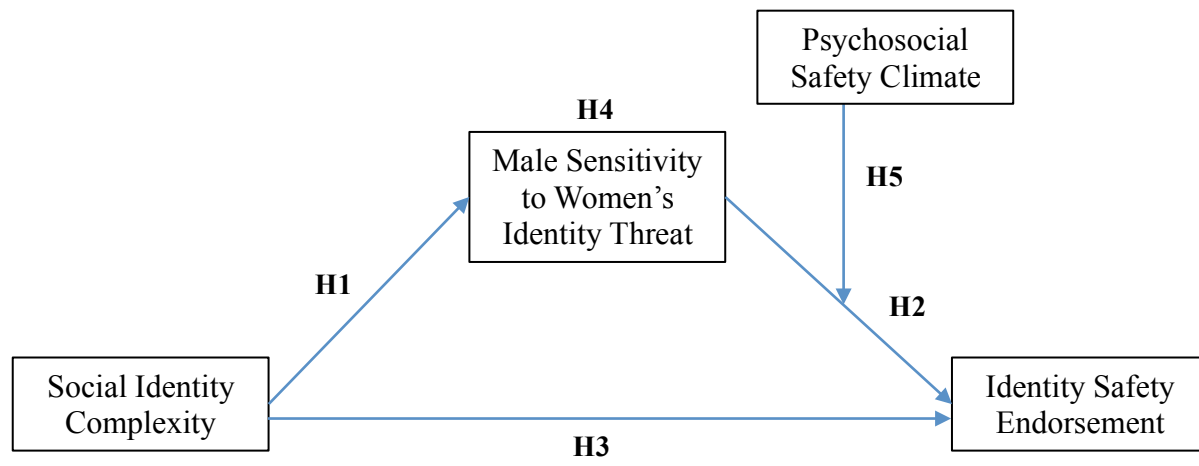


Figure 3. Interaction between differentiation and integration social identity complexity on threat endorsement. A (+) or (-) indicates a significant or marginally significant simple effect, respectively.

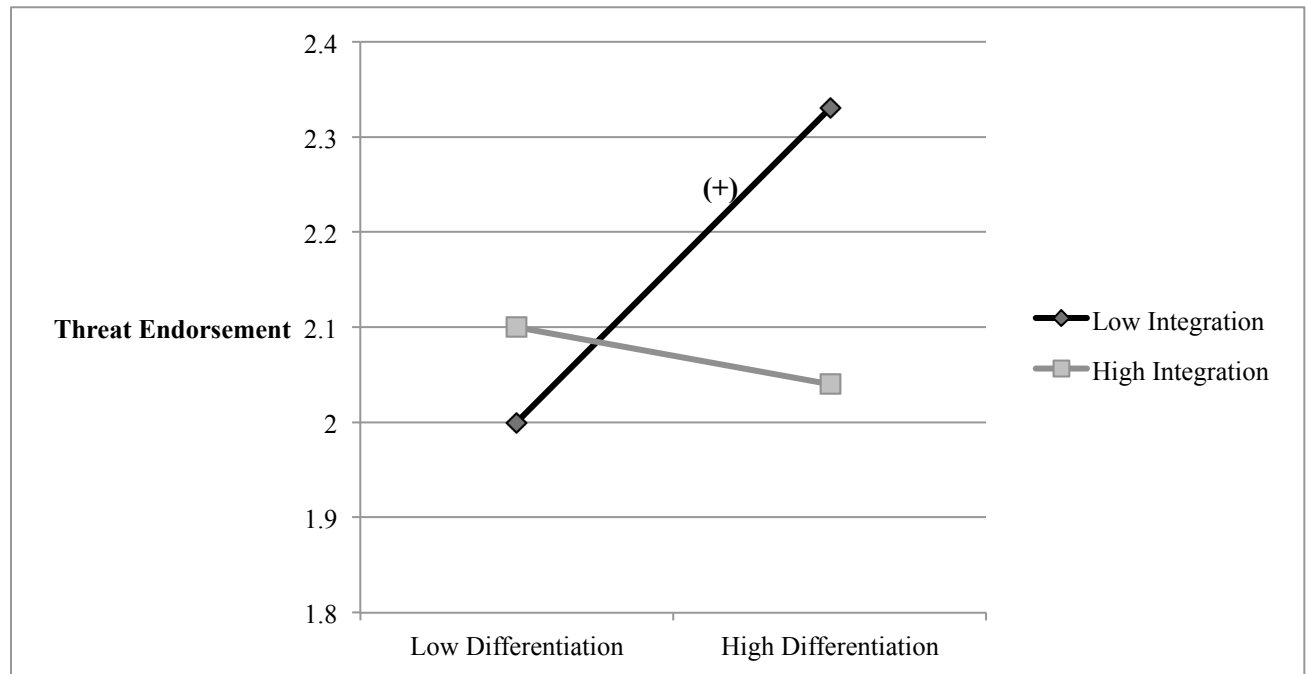


Figure 4. Interaction between differentiation and integration social identity complexity on affect toward victim. A (+) or (-) indicates a significant or marginally significant simple effect, respectively.

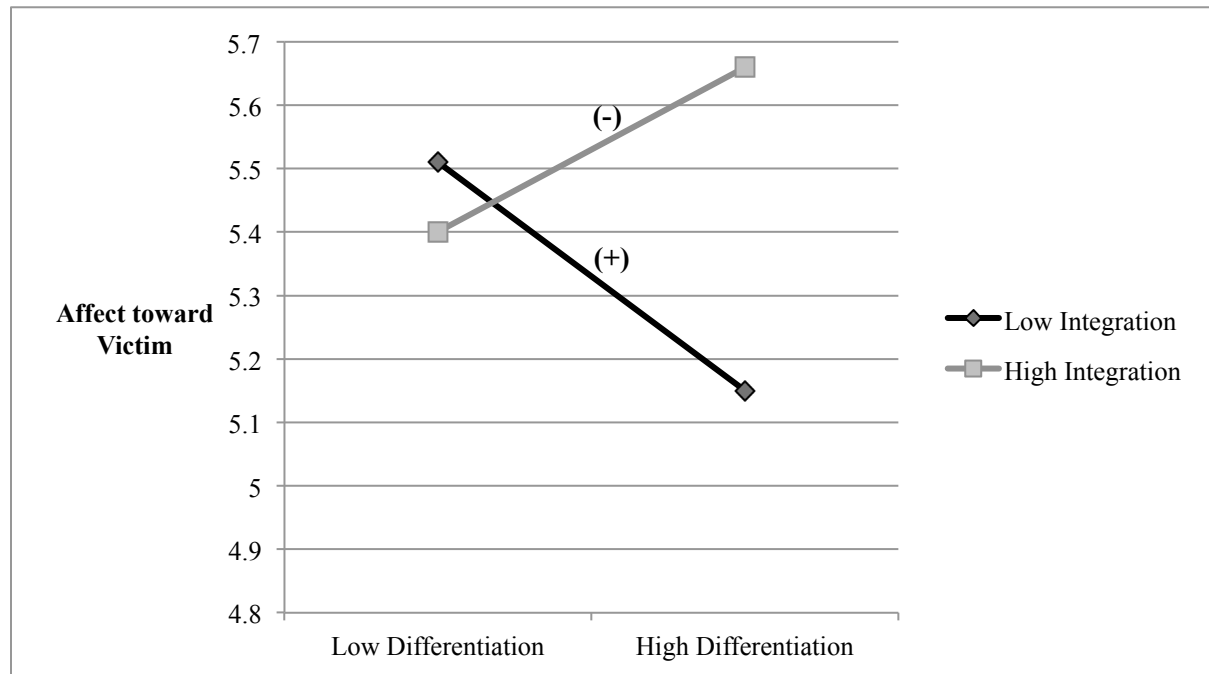


Figure 5. Interaction between differentiation and integration social identity complexity on avoidance endorsement in high psychosocial safety climates. A (+) or (-) indicates a significant or marginally significant simple effect, respectively.

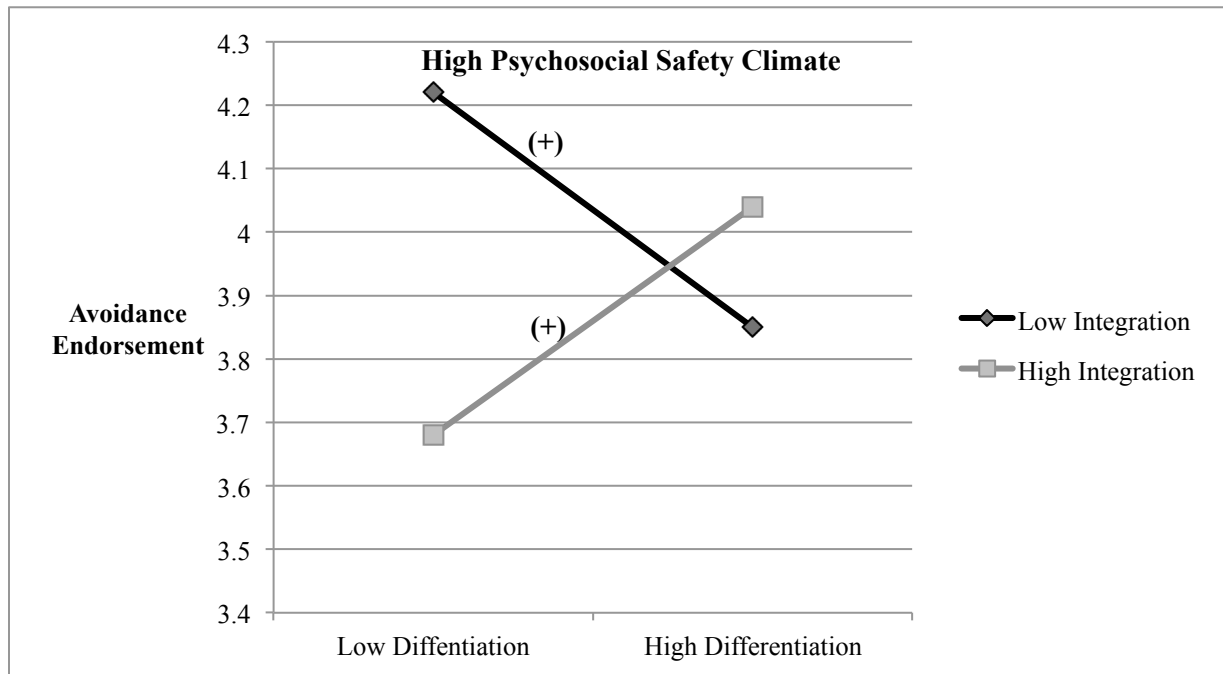


Figure 6. A 2x2 model explaining combinations of differentiation and integration using proposed Roccas and Brewer complexity strategies.

Differentiation	High	Complexity in the form of being able to see differences between one's ingroups, but limited in being able to hold and enact them simultaneously; likely to manifest as <i>dominance</i> or <i>compartmentalization</i>	Highest level of social identity complexity; complexity is maximized by being able to see differences between one's ingroups, and resolve those differences; most likely to manifest as <i>merger</i>
	Low	Lowest form of social identity complexity; complexity is minimized such that differences between one's ingroups are minimally perceived and resolved; most likely to manifest as <i>intersection</i>	Complexity in the form of being able to resolve differences between one's ingroups, but limited in the extent to which one sees differences between ingroups in the first place; likely to manifest as <i>intersection</i>
		Low	High
		Integration	

Table 1

Employed doctoral scientists and engineers in 4-year educational institutions, by broad field of doctorate, sex, and faculty rank: 2006

<i>Field and sex</i>	<i>All employed</i>	<i>Full professor</i>	<i>Associate professor</i>	<i>Assistant professor</i>
<i>All fields</i>	271,540	90,530	57,500	58,890
Male	(67.4)	(80.9)	(65.8)	(57.0)
Female	(32.6)	(19.1)	(34.2)	(43.0)
<i>Science</i>	226,400	75,280	47,490	47,600
Male	(66.7)	(80.7)	(65.1)	(56.8)
Female	(33.3)	(19.3)	(34.9)	(43.2)
<i>Biological, agricultural, and environmental life sciences</i>	79,810	23,040	15,110	16,040
Male	(65.9)	(79.5)	(70.1)	(60.0)
Female	(34.1)	(20.5)	(29.9)	(40.0)
<i>Computer and information sciences</i>	5,790	1,570	1,660	1,730
Male	(78.3)	(82.3)	(78.7)	(73.8)
Female	(21.7)	(17.7)	(21.3)	(26.2)
<i>Mathematics and statistics</i>	17,290	7,330	4,090	3,440
Male	(81.0)	(91.4)	(79.4)	68.1
Female	(19.0)	(8.6)	(20.6)	31.9
<i>Physical sciences</i>	38,760	13,760	7,010	6,820
Male	(82.0)	(92.1)	(75.8)	(73.5)
Female	(18.0)	(7.9)	(24.2)	(26.5)
<i>Engineering</i>	30,230	11,470	5,920	6,510
Male	(87.9)	(95.1)	(89.0)	(79.7)
Female	(12.1)	(4.9)	(11.0)	(20.3)

Table 2

Structure of Identity Safety Endorsement Vignettes

<i>Vignette</i>	<i>Career Stage</i>	<i>Social Identity Threat</i>		<i>Identity Safety Behavior(s)</i>
		<i>Cue</i>	<i>Nature of threat</i>	
1	Job candidate	Affirmative Action reference	Undeserving	Enhancing intellectual and social belonging
2	Early pre-tenure	Gendered assignment	Typecast	Encouraging nonsexist behavior
3	Mid pre-tenure	Gendered assignment	Lack of fit, low status and typecast	Encouraging nonsexist behavior and enhancing social belonging
4	Early post-tenure	Sexist comment that questions legitimacy	Not serious/low performer	Setting equal performance standards across gender with appropriate support
5	Post-tenure	Sexist comment that labels women as emotional	Typecast	Encouraging nonsexist behavior and active resistance of stereotypes
6	Post-tenure	Benevolently sexist behavior that assumes incompetency	Low performer	Encouraging nonsexist behavior and having high performance expectations

Table 3

Means, Standard Deviations, and Intercorrelations of Study Variables

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12
<u>Demographic Variables</u>														
1. Age	52.28	10.94	---											
2. Race	--	--	.11*	---										
3. Sexual Orientation	--	--	.01	-.01	---									
4. Parental Status	--	--	.22**	-.03	.19**	---								
5. Citizenship Status	--	--	.23**	.15**	.05	.03	---							
6. Organizational Tenure	17.13	11.10	.80**	.15**	-.00	.15**	.29**	---						
7. Academic Tenure	--	--	.52**	.08	-.06	.20**	.28**	.49**	---					
8. Percentage of Women	22.89	16.66	-.04	-.01	.03	.04	.01	-.03	-.07	---				
9. Contact with Women	4.38	.78	.06	.16**	-.05	.00	.03	.05	.12**	.18**	---			
<u>Predictors – Identity Complexity</u>														
10. Prototypical	4.15	1.12	-.03	.09	.01	-.06	.05	.01	.03	-.06	.03	---		
11. Differentiation	4.10	2.74	.07	-.18**	.03	.05	.07	.03	.06	.06	-.06	.13**	---	
12. Integration	8.91	2.10	.07	.08	.03	.08	-.01	.00	.03	.09	.05	-.14**	-.34**	---
<u>Mediators</u>														
13. Sensitivity to Threat	3.19	1.11	-.05	-.07	-.04	-.07	.03	-.06	-.04	-.13**	-.12*	-.03	.07	.00
<u>Moderators</u>														
14. Psychosocial Safety Climate	3.63	1.28	-.04	-.04	.08	.10*	-.03	-.02	-.04	.11*	.04	-.15**	-.15**	.14**
<u>Outcomes</u>														
15. Identity Safety (SS)	5.01	.89	.05	-.04	-.01	.03	.06	.04	.13**	.00	.06	-.08	-.01	.09
16. Identity Safety (G)	8.74	1.56	.04	-.08	.05	.07	.05	.01	.08	.01	.13**	-.03	-.01	.13**
17. Threat Endorsement	2.15	.72	.07	-.23**	.01	.02	-.06	.01	-.02	.02	-.14**	-.09	.15**	-.12*
18. Avoidance Endorsement	3.89	1.02	-.06	-.19**	-.03	.00	-.16**	-.06	-.16**	.05	-.14**	-.01	.10*	-.13**
19. Affect Toward Victim	5.37	1.01	.04	.14**	-.04	-.01	.12*	.08	.03	-.04	.03	-.03	-.05	.11*
20. Affect Toward Perpetrator	2.34	.82	.04	-.19**	.05	.00	-.16**	-.01	-.06	.03	-.13**	-.04	.11*	-.09

Note. N ranged from to 415 – 433. * $p < .05$. ** $p < .01$. Race, sexual orientation, parental status, citizenship status, and academic tenure are all dummy coded such that 1 = white (cp. people of color), heterosexual (cp. LGBTQ), parent (cp. nonparent), U. S. citizen (cp. non U. S. citizen), and tenured (cp. not tenured).

Table 3

Means, Standard Deviations, and Intercorrelations of Study Variables

Variable	13	14	15	16	17	18	19	20
<u>Mediators</u>								
13. Sensitivity to Threat	---							
<u>Moderators</u>								
14. Psychosocial Safety Climate	-.12*	---						
<u>Outcomes</u>								
15. Identity Safety (SS)	.10*	.08	---					
16. Identity Safety (G)	.04	.07	.47**	---				
17. Threat Endorsement	.09	.02	-.09	-.11*	---			
18. Avoidance Endorsement	-.04	.00	-.42**	-.25**	.32**	---		
19. Affect Toward Victim	.13**	.11*	.39**	.28**	-.18**	-.25**	---	
20. Affect Toward Perpetrator	-.07	.05	-.38**	-.24**	.47**	.37**	-.30**	---

Note. N ranged from to 415 – 433. * $p < .05$. ** $p < .01$. Race, sexual orientation, parental status, citizenship status, and academic tenure are all dummy coded such that 1 = white (cp. people of color), heterosexual (cp. LGBTQ), parent (cp. nonparent), U. S. citizen (cp. non U. S. citizen), and tenured (cp. not tenured).

Table 4

Hierarchical Regression Analysis for Hypothesis 1 Predicting Male Sensitivity to Threat from Prototypical Social Identity Complexity

Variable	Male Sensitivity to Threat (N = 425)	
	B	SE
Controls		
% Women	-.01*	.00
Contact	-.15*	.07
Predictors		
Prototypical	-.03	.05
R^2	.03**	
ΔR^2	.00	

Note. R^2 = Step 1. ΔR^2 is the change from Step 1 to Step 2.

* $p < .05$. ** $p < .01$.

Table 5

Regression Analysis for Hypothesis 1 Predicting Male Sensitivity to Threat from Differentiation and Integration Social Identity Complexity

Variable	Male Sensitivity to Threat (<i>N</i> = 403)	
	<i>B</i>	<i>SE</i>
Controls		
% Women	-.01*	.00
Contact	-.14 [†]	.08
Race	-.16	.18
Predictors		
Differentiation	.03	.02
Integration	.02	.03
Diff x Int	.01	.01
<i>R</i> ²	.04*	

Note. Continuous predictors were mean centered prior to analysis. Race was dummy coded such that 1 = white (cp. people of color).

[†] $p < .10$. * $p < .05$.

Table 6
Hierarchical Regression Analyses for Hypothesis 2 Predicting Identity Safety Endorsement from Male Sensitivity to Threat

Variable	ISE		
	Situation Specific (<i>N</i> = 427)		General (<i>N</i> = 427)
	<i>B</i>	<i>SE</i>	<i>B</i> <i>SE</i>
Controls			
% Women	.00	.00	.00 .01
Contact	.05	.06	.31** .10
Academic Tenure	.28*	.11	
Predictors			
Male Sensitivity to Threat	.09*	.04	.04 .07
<i>R</i> ²	.02		.02**
ΔR^2	.01*		.00

Note. *R*² = Step 1. ΔR^2 is the change from Step 1 to Step 2. Academic tenure was dummy coded such that 1 = tenured (cp. not tenured)
* *p* < .05. ***p* < .01.

Table 7
Hierarchical Regression Analyses for Hypothesis 3 Predicting Identity Safety Endorsement from Prototypical Social Identity Complexity

Variable	ISE Situation Specific (<i>N</i> = 426)		ISE General (<i>N</i> = 425)	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Controls				
Contact			.30**	.10
Academic Tenure	.30**	.11		
Predictors				
Prototypical	-.07 [†]	.04	-.05	.07
<i>R</i> ²	.02**		.02**	
ΔR^2	.01 [†]		.00	

Note. *R*² = Step 1. ΔR^2 is the change from Step 1 to Step 2. Academic tenure was dummy coded such that 1 = tenured (cp. not tenured).
[†] *p* < .10. * *p* < .05. ** *p* < .01.

Table 8

Regression Analyses for Hypothesis 3 Predicting Identity Safety Endorsement from Differentiation and Integration Social Identity Complexity

Variable	ISE		ISE	
	Situation Specific (<i>N</i> = 404)		General (<i>N</i> = 403)	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Controls				
Contact			.36**	.12
Academic Tenure	.32**	.12		
Race	-.14	.13	-.48 [†]	.25
Predictors				
Differentiation	.00	.02	.03	.04
Integration	.04 [†]	.02	.14**	.05
Diff x Int	.00	.01	.01	.02
<i>R</i> ²	.03*		.05**	

Note. Race and academic tenure were dummy coded such that 1 = white (cp. people of color) and tenured (cp. not tenured). Continuous predictors were mean centered prior to analysis.

[†] *p* < .10. * *p* < .05. ** *p* < .01.

Table 9

Mediation Model of Hypothesis 4 Testing the Indirect Effect of Male Sensitivity to Threat on Social Identity Complexity and Identity Safety Endorsement

Model	N	Total Effect	Direct Effect	Indirect Effect	95% Bootstrap Confidence Interval	
					Lower	Upper
Prototypical → Sensitivity → ISE (SS)	425	-.067	-.064	-.002	-.016	.004
Differentiation → Sensitivity → ISE (SS)	403	-.008	-.011	.003	-.001	.010
Integration → Sensitivity → ISE (SS)	415	.035 [†]	.034 [†]	.001	-.004	.008
Diff x Int → Sensitivity → ISE (SS)	403			.001	-.001	.004
Prototypical → Sensitivity → ISE (G)	425	-.052	-.050	-.002	-.028	.004
Differentiation → Sensitivity → ISE (G)	403	.000	-.003	.003	-.001	.015
Integration → Sensitivity → ISE (G)	415	.109*	.108*	.001	-.004	.011
Diff x Int → Sensitivity → ISE (G)	403			.001	-.001	.006

Note. Number of samples for bias corrected bootstrap = 2000. The total effect is the effect of the predictor on the outcome when the mediator is not present. The direct effect is the effect of the predictor on the outcome controlling for the mediator. The indirect effect = total effect – direct effect. Continuous predictors for the interaction model were mean centered prior to analysis.

[†] $p < .10$. * $p < .05$.

Table 10

Regression Analyses Testing the Interaction Between Male Sensitivity to Threat and Psychosocial Safety Climate on Identity Safety Endorsement

Variable	ISE		ISE	
	Situation Specific (<i>N</i> = 424)		General (<i>N</i> = 424)	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Controls				
Contact	.06	.06	.33**	.12
Academic Tenure	.31*	.12		
Parental Status	.01	.10	.31	.22
Predictors				
Male Sensitivity to Threat	.09*	.04	.09	.08
PSC	.06 [†]	.03	.10	.07
Sensitivity x PSC	-.01	.03	-.02	.06
<i>R</i> ²	.04		.03*	

Note. Academic tenure and parental status were dummy coded such that 1 = tenured (cp. not tenured) and parent (cp. nonparent). Continuous predictors were mean centered prior to analysis.

[†] $p < .10$. * $p < .05$. ** $p < .01$.

Table 11

Moderated Mediation Model of Hypothesis 5 Testing the Indirect Effect of Male Sensitivity to Threat on Social Identity Complexity and Identity Safety Endorsement as Conditional Based on Psychosocial Safety Climate

Model	N	Indirect Effect	95% Bootstrap Confidence Interval	
			Lower	Upper
Prototypical → Sensitivity → ISE (V)	424			
<i>Low PSC</i>		-.003	-.023	.004
<i>Mod PSC</i>		-.003	-.018	.004
<i>High PSC</i>		-.003	-.018	.004
Differentiation → Sensitivity → ISE (V)	403			
<i>Low PSC</i>		.003	-.001	.014
<i>Mod PSC</i>		.003	-.001	.011
<i>High PSC</i>		.003	-.001	.011
Integration → Sensitivity → ISE (V)	414			
<i>Low PSC</i>		.001	-.003	.010
<i>Mod PSC</i>		.001	-.003	.008
<i>High PSC</i>		.001	-.003	.009
Prototypical → Sensitivity → ISE (S)	424			
<i>Low PSC</i>		-.004	-.038	.005
<i>Mod PSC</i>		-.003	-.028	.004
<i>High PSC</i>		-.002	-.031	.006
Differentiation → Sensitivity → ISE (S)	402			
<i>Low PSC</i>		.005	-.001	.024
<i>Mod PSC</i>		.004	-.001	.018
<i>High PSC</i>		.002	-.003	.018
Integration → Sensitivity → ISE (S)	414			
<i>Low PSC</i>		.001	-.004	.018
<i>Mod PSC</i>		.001	-.003	.012
<i>High PSC</i>		.001	-.004	.012

Note. Number of samples for bias corrected bootstrap = 2000. Low = mean minus one *SD*. Mod = mean. High = mean plus one *SD*

Table 12

Moderated Mediation Model of Hypothesis 5 Testing the Indirect Effect of Male Sensitivity to Threat on the Interactive Effect of Differentiation and Integration Social Identity Complexity on Identity Safety Endorsement as Conditional Based on Psychosocial Safety Climate

Model	N	Indirect Effect	95% Bootstrap Confidence Interval	
			Lower	Upper
Diff x Int → Sensitivity → ISE (SS)				
Low Int	402	.002	-.003	.013
Low Int		.002	-.003	.010
Low Int		.002	-.003	.011
Mod Int		.004	-.001	.015
Mod Int		.003	-.001	.011
Mod Int		.003	-.001	.012
High Int		.005	-.000	.023
High Int		.005	-.000	.017
High Int		.004	-.001	.017
Diff x Int → Sensitivity → ISE (G)				
Low Int	402	.003	-.004	.021
Low Int		.002	-.004	.016
Low Int		.001	-.004	.020
Mod Int		.005	-.002	.024
Mod Int		.004	-.001	.019
Mod Int		.002	-.004	.020
High Int		.007	-.002	.036
High Int		.005	-.001	.027
High Int		.003	-.005	.027

Note. Number of samples for bias corrected bootstrap = 2000. Low = mean minus one *SD*. Mod = mean. High = mean plus one *SD*. Continuous predictors for the interaction model were mean centered prior to analysis.

Table 13

Hierarchical Regression Analyses for Predicting Threat and Avoidance Endorsement and Affect from Male Sensitivity to Threat

Variable	Threat Endorsement (<i>N</i> = 415)		Avoidance Endorsement (<i>N</i> = 413)		Affect toward Victim (<i>N</i> = 412)		Affect toward Perpetrator (<i>N</i> = 413)	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Controls								
% Women	.00	.00	.00	.00	.00	.00	.00	.00
Contact	-.11*	.05	-.15	.07	.04	.07	-.12*	.05
Race	-.41**	.10	-.39**	.13	.34*	.14	-.33**	.11
Academic Tenure			-.28*	.13				
Citizenship Status			-.34*	.15	.31*	.15	-.33**	.12
Predictors								
Male Sensitivity to Threat	.03	.03	-.06	.04	.14**	.05	-.07*	.04
R^2	.07**		.08**		.03**		.07**	
ΔR^2	.00		.00		.02**		.01 [†]	

Note. R^2 = Step 1. ΔR^2 is the change from Step 1 to Step 2. Race, academic tenure and citizenship status were dummy coded such that 1 = white (cp. people of color), tenured (cp. not tenured), and U. S. citizen (cp. non U. S. citizen).

[†] $p < .10$. * $p < .05$. ** $p < .01$.

Table 14

Hierarchical Regression Analyses for Predicting Threat and Avoidance Endorsement and Affect from Prototypical Social Identity Complexity

Variable	Threat Endorsement (<i>N</i> = 415)		Avoidance Endorsement (<i>N</i> = 413)		Affect toward Victim (<i>N</i> = 412)		Affect toward Perpetrator (<i>N</i> = 413)	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Controls								
Contact	-.10*	.05	-.13*	.06			-.11*	.05
Race	-.42**	.10	-.39**	.14	.36**	.14	-.35**	.11
Academic Tenure			-.30*	.13				
Citizenship Status			-.33*	.15	.31*	.15	-.34**	.12
Predictors								
Prototypical	-.04	.03	.02	.04	-.05	.04	-.01	.04
<i>R</i> ²	.07**		.08**		.03**		.07**	
ΔR^2	.03		.00		.00		.00	

Note. *R*² = Step 1. ΔR^2 is the change from Step 1 to Step 2. Race, academic tenure and citizenship status were dummy coded such that 1 = white (cp. people of color), tenured (cp. not tenured), and U. S. citizen (cp. non U. S. citizen).

* *p* < .05. ***p* < .01.

Table 15

Regression Analysis for Predicting Threat and Avoidance Endorsement and Affect from Differentiation and Integration Social Identity Complexity

Variable	Threat Endorsement (N = 404)		Avoidance Endorsement (N = 402)		Affect toward Victim (N = 401)		Affect toward Perpetrator (N = 402)	
	B	SE	B	SE	B	SE	B	SE
Controls								
Contact	-.11*	.06	-.13 [†]	.07			-.11	.06
Race	-.39**	.11	-.36*	.15	.35*	.15	-.29*	.12
Academic Tenure			-.32*	.14				
Citizenship Status			-.34*	.16	.33*	.16	-.36*	.16
Predictors								
Differentiation	.03	.02	.01	.02	-.01	.02	.03	.02
Integration	-.02	.02	-.05 [†]	.03	.05*	.02	-.02	.02
Diff x Int	-.02*	.01	.01	.01	.03**	.01	-.00	.01
R^2	.10**		.09**		.07**		.08**	

Note. Race, academic tenure and citizenship status were dummy coded such that 1 = white (cp. people of color), tenured (cp. not tenured), and U. S. citizen (cp. non U. S. citizen). Continuous predictors were mean centered prior to analysis.

[†] $p < .10$. * $p < .05$. ** $p < .01$.

Appendix A

Preview Study Invitation Email

Subject Line: Research Request

Dear Dr. (Last Name),

I hope that you are having a great start to the new year.

My name is Mekayla Castro, and I am a doctoral student at Teachers College, Columbia University. I am reaching out to ask for your assistance in helping me complete my dissertation research, which concerns increasing our understanding of professional relationships and academic institutions in STEM fields.

Because I am interested in learning about the variety of experiences that exist for faculty in STEM fields, I have spent the last few weeks compiling a representative sample of professors from more than 35 institutions of various sizes and geographic locations across the United States.

As someone selected through this process, you will be receiving an official email invitation to complete my online survey study. You can expect to receive the invitation in 2 days' time. I respectfully ask that you participate as your input is greatly valued.

As a scholar, you understand the importance of research for the furtherance of any academic discipline, and I appeal to your sense of intellectual curiosity and commitment to scientific inquiry. Thank you for time and I hope that you will seriously consider participating in my research.

This study has been approved by the Teachers College, Columbia University Institutional Review Board, Protocol #13-123.

Sincerely,

Mekayla Castro
Doctoral Candidate, Social-Organizational Psychology
Teachers College, Columbia University
New York, NY
mkc2115@tc.columbia.edu

Appendix B

Study Invitation Email

Subject Line: Dissertation Study on STEM Academe

Dear Professor (Last Name),

You have been identified through a random process to participate in a national study of STEM (science, technology, engineering, math) environments. This brief electronic survey study explores the academic workplace and professional relationships. The practical significance of the research is to create more satisfying work environments for academic professors in STEM fields. As your input will assist me in completing my dissertation, I respectfully request your participation.

The survey should take approximately 15-20 minutes to complete. The deadline to complete the survey is February 5, 2013.

If you are interested in participating, please click [\\$ {1://SurveyLink?d=here}](#) or below.

If you are certain that you will not participate or if I have included you by error, please click on the 'Unsubscribe' link below.

This research is being conducted at Teachers College, Columbia University, under the supervision of Dr. Caryn J. Block, Associate Professor of Psychology and Education.

Thank you for your consideration.

Sincerely,

Mekayla Castro
Doctoral Candidate, Social-Organizational Psychology
Teachers College, Columbia University
New York, NY
mkc2115@tc.columbia.edu

Approved Institutional Review Board Protocol #13-123

Appendix C

Modified Consent Form

STEM Faculty Experiences Survey

Thank you for your interest in participating. The following provides you with the additional information necessary to obtain informed consent. Please review the information and indicate your participation decision by clicking on the appropriate button at the bottom of the page.

- The questions in this survey pertain to your perceptions of, and experiences in, your current institution as a faculty member.
- The survey uses a secure, web-based platform to ensure that privacy and confidentiality are maintained throughout the process.
- No identifying information will be collected or connected to your survey responses in this research. The data collected will be accessible only to the principal investigator via the password protected survey website and a password protected computer once the data has been downloaded.
- Your participation is completely voluntary and anonymous. You may refuse to participate in the study, or withdraw at any time by closing your browser.
- Individual responses will not be analyzed. Data is analyzed in the aggregate to examine patterns.
- To maximize responses and because your input is valued, periodic reminders regarding the invitation to participate will be sent to non-respondents.
- The risks associated with this study are minimal, and any discomfort you may experience in this study should be no greater than what is typically encountered in a discussion on faculty relations and institutional affairs.
- There are no direct benefits from participating in this research. You will be offered access to the results upon completion of the study and may glean insights from the findings about yourself and/or your institution.

The survey consists of 5 sections and the entire survey should take no longer than 15 minutes to complete. If at any time you have questions regarding the research or your participation, you can contact the investigator, who will answer your questions.

For comments or concerns regarding the conduct of the research or questions about your rights as a research subject, contact the Teachers College, Columbia University Institutional Review Board /IRB. The phone number for the IRB is (212) 678-4105, or you can write to the IRB at Teachers College, Columbia University, 525 W. 120th Street, New York, NY, 10027, Box 151.

By clicking ‘yes’ below, you consent to participate in this research study.

- yes
- no

Thank you in advance for your participation!

Sincerely,

Mekayla Castro
Doctoral Candidate, Social-Organizational Psychology
Teachers College, Columbia University
New York, NY
mkc2115@tc.columbia.edu

Appendix D

Debrief

Thank you for participating in my dissertation research. The specific aim of the current study is to investigate the influence of how the way one thinks about the various social groups to which one belongs is associated with perceptions about the work environment for female colleagues and how one may then in turn interact with colleagues. In addition, it investigates how a work units approach to reducing psychological stressors may affect the quality of interactions between colleagues of different genders.

Please note that all of your responses to the questions in the survey will be kept confidential and will only be used for this research.

If you have any questions or concerns about this project, please feel free to contact Mekayla Castro at mkc2115@tc.columbia.edu.

Thank you again for your participation!

Appendix E

Measures – Social Identity Complexity

Social Identity Complexity (Miller et al., 2009; Roccas & Brewer, 2002)

Group Elicitation Questionnaire (Miller et al., 2009)

The following questions ask you about various group memberships. Responses are anonymous and will only be analyzed in the aggregate; individual level data will not be analyzed.

1. Which parental status best describes you?
 - nonparent
 - parent
2. Which best describes your family background?
 - poor
 - working class
 - lower-middle class
 - middle class
 - upper-middle class
 - upper class
3. Which, if any, describes your relationship status?
 - single
 - dating
 - cohabitating
 - engaged
 - married
 - separated/divorced
 - widowed
 - other _____
4. What is your sexual orientation?
 - gay
 - lesbian
 - bisexual
 - straight/heterosexual
 - other _____
5. What is your gender?
 - male
 - female
 - transgender
6. What is your religious orientation (e.g. Muslim, agnostic, Roman Catholic)?

7. What is your nationality? _____
8. What type of hobbyist are you, if any (e.g. gardener, musician, runner)?

Prototypical Task (Roccas & Brewer, 2002)

Items are rated on a 7-point Likert scale: 1-*strongly disagree*, 2-*disagree*, 3-*somewhat disagree*, 4-*neither agree nor disagree*, 5-*somewhat agree*, 6-*agree*, and 7-*strongly agree*

The following questions ask about your impression regarding the relationships between the groups you have chosen, and in addition, their relationship to being a STEM academic.

1. The typical STEM academic is very similar to the typical <group1> (person)?
2. The typical STEM academic is very similar to the typical <group2> (person)?
3. The typical <group1> (person) is very similar to the typical <group2> (person)?

Differentiation-Integration Items (Castro, 2012)

Items are rated on an 11-point bipolar scale: 0-*not true at all for me* and 10-*definitely true for me*

Similar to the last set of questions, please answer the following according to how you view the relationships between your various group memberships.

Differentiation items

1. For me, there are many differences in beliefs and values between being a STEM academic and being (a) <group1>.
2. For me, there are many differences in beliefs and values between being a STEM academic and being (a) <group2>.
3. For me, there are many differences in beliefs and values between being (a) <group1> and being (a) <group2>.

Integration items

4. I can resolve any potential conflicts in beliefs and values between being a STEM academic and being (a) <group1>.
5. I can resolve any potential conflicts in beliefs and values between being a STEM academic and being (a) <group2>.
6. I can resolve any potential conflicts in beliefs and values between being (a) <group1> and being (a) <group2>.

Appendix F

Measures – Male Sensitivity to Women’s Identity Threat

Group-directed Gender Identity Threat (Roberson, Fudman, & Pegues, 2011)

Items are rated a 7-point Likert scale: 1-*strongly disagree*, 2-*disagree*, 3-*somewhat disagree*, 4-*neither agree nor disagree*, 5-*somewhat agree*, 6-*agree*, and 7-*strongly agree*

Items have been amended by the principal investigator. Original wording appears in parentheses.

These items ask for your perception about academic STEM fields in general, *not whether these statements reflect your personal beliefs*. Please respond by indicating how much you agree with each statement.

In STEM fields:

Typecast

1. Women are expected to be accommodating to others.
2. Women are expected to be collaborative and cooperative.
3. It is common for women to be judged on their appearance more often than men.

Low Status

4. People assume that female professionals are junior to the male professionals.
5. Men (here) are assumed to be of higher status than women.

Not Serious

6. Women are thought to be less serious about their careers/work than men.
7. There is an unspoken assumption that men are more committed to their work than women.

Undeserving

8. Women are perceived to have unearned advantages.
9. There is a belief (here) that women are hired primarily to meet diversity goals.

Lack of Fit

10. When (my) co-workers think of a “typical” professional in this field, they think of a man and not a woman.
11. My peers’ (co-worker’s) image of a prototypical professional in this field is male.
12. Men are seen as a better fit in STEM (here) than are women.
13. (My) Colleagues tend to feel that women do not belong in our field/profession.

Low Performer

14. (My co-workers) Colleagues believe that women are not high-performers.
15. (Co-workers) Colleagues don’t really expect women to attain a high level of success in our field/profession.

Appendix G

Measures – Psychosocial Safety Climate

Psychosocial Safety Climate (Hall et al., 2010)

Items are rated on a 7-point Likert scale: 1-*strongly disagree*, 2-*disagree*, 3-*somewhat disagree*, 4-*neither agree nor disagree*, 5-*somewhat agree*, 6-*agree*, and 7-*strongly agree*

Items have been amended by the principal investigator. Original wording appears in parentheses.

The following statements concern what it is like to work in your department and institution. Please respond candidly with the extent to which you agree with each statement. Responses are anonymous.

Management commitment

1. (In my workplace, senior management) The administration would act quickly to correct problems/issues that affect faculty (employees') psychological (health) wellbeing.
2. (Senior management) The administration would act decisively if a concern of faculty (employees') psychological (status) wellbeing were raised.
3. (Senior management) The administration shows support for stress prevention through involvement and commitment.

Management priority

4. Psychological (health) wellbeing of faculty is a priority for this institution (organization).
5. (Senior management) The administration clearly considers the (psychological) social and emotional health of faculty (employees) to be of great importance.
6. (Senior management) The administration considers faculty (employees) psychological (health) wellbeing to be as important as productivity.

Organizational communication

7. There is good communication here about psychological (safety) wellness issues which affect me.
8. Information about workplace (psychological health) wellbeing is (always) brought to my attention by the administration (manager/supervisor).
9. My contributions to resolving (occupational) wellness (work health and safety) concerns in the institution (organization) are listened to.

Organizational participation

10. Participation and consultation in psychological (health and safety) wellbeing occurs with all faculty (employees, unions and health and safety representatives) in my institution (workplace).
11. (Employees) Faculty are encouraged to become involved in workplace (psychological health and safety) stress and wellness matters.
12. In my institution (organization), the prevention of stress involves all levels of the organization.

Appendix H

Measures –Situation Specific Identity Safety Endorsement

Situation Specific Identity Safety Endorsement (Castro, 2012)

Instructions: In this next section, you are going to be presented with a series of short vignettes that describe various work situations. Read each one and *respond as if the scenario was happening in the context of your current institution*.

There are no right or wrong answers. We are interested in understanding the variety of responses that people have in these types of situations.

Vignette 1

Your department is in the process of hiring for a tenure-track position. Lisa, a candidate on the shortlist for the position, is at the end of a two-year postdoc at a Research I institution. With an impressive publishing record, her research interests are in alignment with the strategic direction of the department. Lisa has just finished her job talk and is conversing with you about her research. Paul, an associate professor in the program, walks up and says to Lisa, “Nice talk. You know, the dean is really keen on us hiring a woman, and since you are the only female candidate, you will probably get the job.” You notice that Lisa appears to be unsure as to how to respond.

The following are three possible actions you could take in response to this situation. Keeping in mind what it is like to work in your institution, rate how likely you would be to perform each one.

1. How likely are you to verbally agree with Paul that Lisa will get the job because she is a woman?

Very unlikely	Unlikely	Somewhat unlikely	Neither unlikely nor likely	Somewhat likely	Likely	Very likely
1	2	3	4	5	6	7

2. How likely are you to ignore Paul’s comment and continue talking with Lisa about her research?

Very unlikely	Unlikely	Somewhat unlikely	Neither unlikely nor likely	Somewhat likely	Likely	Very likely
1	2	3	4	5	6	7

3. How likely are you to tell Paul that Lisa would be a good hire based on her qualifications and because she is a good fit with the department?

Very unlikely	Unlikely	Somewhat unlikely	Neither unlikely	Somewhat likely	Likely	Very likely
------------------	----------	----------------------	---------------------	--------------------	--------	-------------

				nor likely			
1	2	3	4	5	6	7	

Is there another response you might have in this situation that is not listed here? If so, please describe. [Comment Box]

4. How would you feel toward Lisa in this situation?

Negatively	1	2	3	4	5	6	7	Positively
------------	---	---	---	---	---	---	---	------------

5. How would you feel toward Paul in this situation?

Negatively	1	2	3	4	5	6	7	Positively
------------	---	---	---	---	---	---	---	------------

Vignette 2

Following the search process, Lisa was offered the job and she accepted. It is the start of her 2nd year as an assistant professor. A faculty meeting is being held to determine the assignment of the incoming doctoral student cohort to advisors. Five students need to be placed, two of whom are female. In discussing the assignment of Jim, who is coming from the department's undergraduate program, Lisa reminds the group that she has been working with him and that he has requested her as his advisor. However, the chair insists that the female students should be assigned to Lisa so that they get proper mentoring.

Keeping in mind what it is like to work in your institution, rate how likely you would be to perform each of the following actions.

1. How likely are you to agree with the chair and say that Lisa is the best advisor for the female students?

Very unlikely	Unlikely	Somewhat unlikely	Neither unlikely nor likely	Somewhat likely	Likely	Very likely
1	2	3	4	5	6	7

2. How likely are you to avoid participating in the discussion?

Very unlikely	Unlikely	Somewhat unlikely	Neither unlikely nor likely	Somewhat likely	Likely	Very likely
1	2	3	4	5	6	7

3. How likely are you to comment that it is not appropriate to make assignment decisions based solely on gender?

Very unlikely	Unlikely	Somewhat unlikely	Neither unlikely nor likely	Somewhat likely	Likely	Very likely
1	2	3	4	5	6	7

Is there another response you might have in this situation that is not listed here? If so, please describe. [Comment Box]

4. How would you feel toward Lisa in this situation?

Negatively	1	2	3	4	5	6	7	Positively
------------	---	---	---	---	---	---	---	------------

5. How would you feel toward the chair in this situation?

Negatively	1	2	3	4	5	6	7	Positively
------------	---	---	---	---	---	---	---	------------

Vignette 3

Three years have passed and it is the start of a new academic year. You and Lisa are meeting in her office which is adjacent to the program office. Sarah, a new doctoral student, is getting some water from the cooler. Ed, a tenured professor who was on sabbatical the prior year walks into the program office and you and Lisa overhear him say to Sarah, "Oh, you must be the new departmental assistant. Would you mind scanning this document for me? I need it by this afternoon." Sarah says in reply, "Sorry, but no. I'm one of the new doctoral students, not the assistant."

Keeping in mind what it is like to work in your institution, rate how likely you would be to perform each of the following actions.

1. How likely are you to comment to Lisa that Sarah should have scanned the document out of respect for Ed?

Very unlikely	Unlikely	Somewhat unlikely	Neither unlikely nor likely	Somewhat likely	Likely	Very likely
1	2	3	4	5	6	7

2. How likely are you to continue your conversation with Lisa as if you did not hear the exchange?

Very unlikely	Unlikely	Somewhat unlikely	Neither unlikely nor likely	Somewhat likely	Likely	Very likely
1	2	3	4	5	6	7

3. How likely are you to say to Lisa that Ed should not have assumed Sarah was an assistant?

Very unlikely	Unlikely	Somewhat unlikely	Neither unlikely nor likely	Somewhat likely	Likely	Very likely
1	2	3	4	5	6	7

Is there another response you might have in this situation that is not listed here? If so, please describe. [Comment Box]

4. How would you feel toward Sarah in this situation?

Negatively	1	2	3	4	5	6	7	Positively
------------	---	---	---	---	---	---	---	------------

5. How would you feel toward Ed in this situation?

Negatively	1	2	3	4	5	6	7	Positively
------------	---	---	---	---	---	---	---	------------

Vignette 4

Having met the expectations of the department and the institution, Lisa has just successfully completed the tenure process. Shortly thereafter during a faculty meeting, Lisa announces to her colleagues that she is pregnant. She says that she and the chair spoke about the implications for the courses she teaches and her committee work. Daniel, a tenured professor, says jokingly, "Congratulations. Well, with a baby on the way and with tenure in hand, there goes your productivity."

Keeping in mind what it is like to work in your institution, rate how likely you would be to perform each of the following actions.

1. How likely are you to indicate amusement by smiling or laughing?

Very unlikely	Unlikely	Somewhat unlikely	Neither unlikely nor likely	Somewhat likely	Likely	Very likely
1	2	3	4	5	6	7

2. How likely are you to redirect the conversation to discuss the division of work while Lisa is on leave?

Very unlikely	Unlikely	Somewhat unlikely	Neither unlikely nor likely	Somewhat likely	Likely	Very likely
1	2	3	4	5	6	7

3. How likely are you to comment that circumstances affect everyone's productivity at some point in life?

Very unlikely	Unlikely	Somewhat unlikely	Neither unlikely nor likely	Somewhat likely	Likely	Very likely
1	2	3	4	5	6	7

Is there another response you might have in this situation that is not listed here? If so, please describe. [Comment Box]

4. How would you feel toward Lisa in this situation?

Negatively	1	2	3	4	5	6	7	Positively
------------	---	---	---	---	---	---	---	------------

5. How would you feel toward Daniel in this situation?

Negatively	1	2	3	4	5	6	7	Positively
------------	---	---	---	---	---	---	---	------------

Vignette 5

Lisa is back from leave and a junior faculty member, Samuel, recently submitted his resignation after receiving an attractive offer from another university. At a subsequent faculty meeting, one of the agenda items is to determine the ideal candidate as his replacement. The head of the search committee begins the discussion by saying, "The ideal candidate would have a similar research agenda as Samuel, and he should have a clear vision for advancing his research." Lisa, who is on the search committee, interrupts and adds, "...or *she* should have a clear vision." The committee head replies sarcastically, "Oh, you know what I mean. Don't be so sensitive."

Keeping in mind what it is like to work in your institution, rate how likely you would be to perform each of the following actions.

1. How likely are you to nod in agreement that Lisa is being sensitive?

Very	Unlikely	Somewhat	Neither	Somewhat	Likely	Very likely
------	----------	----------	---------	----------	--------	-------------

unlikely		unlikely	unlikely nor likely	likely		
1	2	3	4	5	6	7

2. How likely are you to remain a quiet observer?

Very unlikely	Unlikely	Somewhat unlikely	Neither unlikely nor likely	Somewhat likely	Likely	Very likely
1	2	3	4	5	6	7

3. How likely are you to say that Lisa makes an important point about potential gender bias in the search process?

Very unlikely	Unlikely	Somewhat unlikely	Neither unlikely nor likely	Somewhat likely	Likely	Very likely
1	2	3	4	5	6	7

Is there another response you might have in this situation that is not listed here? If so, please describe. [Comment Box]

4. How would you feel toward Lisa in this situation?

Negatively	1	2	3	4	5	6	7	Positively
------------	---	---	---	---	---	---	---	------------

5. How would you feel toward committee chair in this situation?

Negatively	1	2	3	4	5	6	7	Positively
------------	---	---	---	---	---	---	---	------------

Vignette 6

You are at a small conference you regularly attend, and Lisa is there as a selected presenter for a high profile panel session. You are conversing with Lisa right before her session. An acquaintance of yours from another university approaches you to say hello. You introduce Lisa and mention that she is one of the panelists. Your acquaintance mentions that a woman has never been on this particular panel and starts to give Lisa instructions on how to present.

Keeping in mind what it is like to work in your institution, rate how likely you would be to perform each of the following actions.

1. How likely are you to also give Lisa tips on her presentation?

Very unlikely	Unlikely	Somewhat unlikely	Neither unlikely nor likely	Somewhat likely	Likely	Very likely
1	2	3	4	5	6	7

2. How likely are you to wait until your acquaintance has finished speaking and then resume your initial conversation?

Very unlikely	Unlikely	Somewhat unlikely	Neither unlikely nor likely	Somewhat likely	Likely	Very likely
1	2	3	4	5	6	7

3. How likely are you to mention to your acquaintance that Lisa is a tenured academic who is very experienced at presenting?

Very unlikely	Unlikely	Somewhat unlikely	Neither unlikely nor likely	Somewhat likely	Likely	Very likely
1	2	3	4	5	6	7

Is there another response you might have in this situation that is not listed here? If so, please describe. [Comment Box]

4. How would you feel toward Lisa in this situation?

Negatively	1	2	3	4	5	6	7	Positively
------------	---	---	---	---	---	---	---	------------

5. How would you feel toward your acquaintance in this situation?

Negatively	1	2	3	4	5	6	7	Positively
------------	---	---	---	---	---	---	---	------------

Appendix I

Measures – General Identity Safety Endorsement

General Identity Safety Endorsement (Castro, 2012)

Items are rated on an 11-point bipolar scale: 0-*very infrequently* to 10-*very frequently*

With your workplace experiences in mind, please rate how frequently you do the following.

1. I challenge others when they make remarks that devalue my female colleagues.
2. I speak up when someone acts disrespectfully toward my female colleagues.
3. *I am just as likely to acknowledge the scholarship and accomplishments of STEM women compared to men.
4. *I try to minimize my behavior that may favor men over women.
5. I make it a point to mentor female students.
6. *I foster friendships with male and female colleagues equally.
7. I verbally express my support for women in STEM.
8. I emphasize to students and colleagues the importance of diversity for the advancement of our field.
9. I take action to create an environment that is socially accepting of STEM women.
10. I promote initiatives that minimize barriers to advancement for my female colleagues.

Note. * These items were dropped from the final scale following the EFA.

Appendix J

List of Control and Demographic Variables

1. Current institution

Name of the current institution where you work.

2. Organizational tenure

Number of years employed at this institution.

3. Specialization

Broad area of STEM specialisation (*Biological / agricultural / environmental science, Computer / information science, Engineering, Mathematics / statistics, Physical science*).

4. Academic rank

Academic rank (*Assistant professor, Associate professor, Full professor, Other*).

5. Academic tenure status

Tenure status (*Untenured, Tenured*)

6. Proportion of male and female faculty

Approximate percentage of men and women assistant, associate, and full professors in your department (Percentage must total 100).

7. Interaction with female colleagues

To what extent do you have interaction with women colleagues/peers in your professional life (*Never, Rarely, Sometimes, Often, All of the time*)?

8. Age

Age (numeric value only)

9. Citizenship status

Citizenship status (*U.S. citizen, Permanent resident, Temporary visa holder*)

10. Race/ethnicity

Race/ethnicity (*White/Caucasian, Black/African/African-American, Hispanic/Latino, Asian/Pacific Islander, Native American/Alaskan Native, Biracial/Multiracial, Other*)